The Mining Journal

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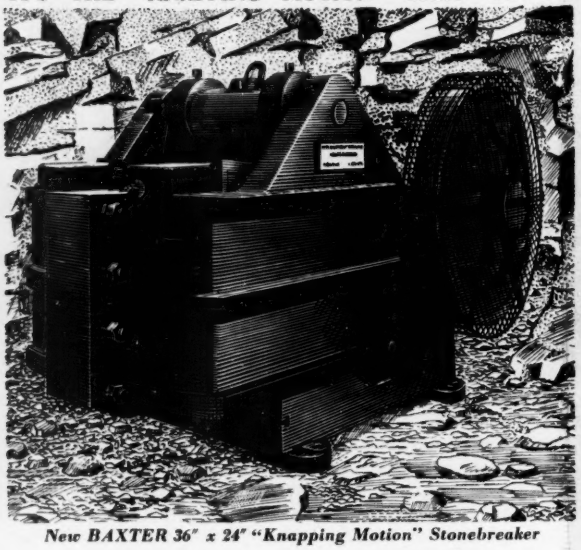

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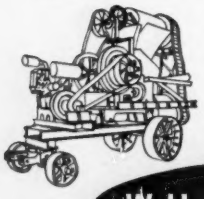

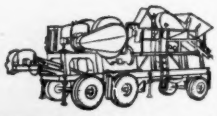

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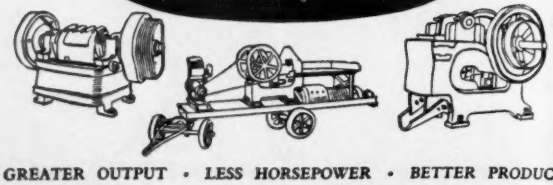

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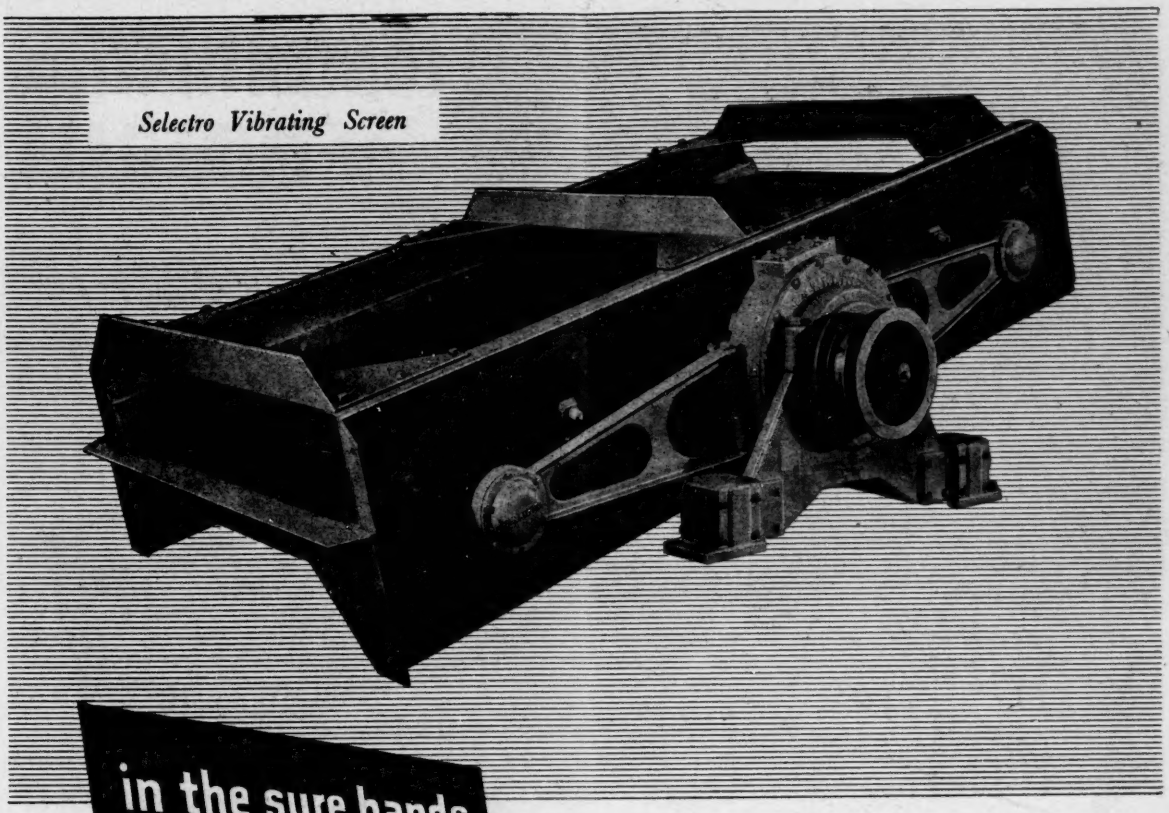

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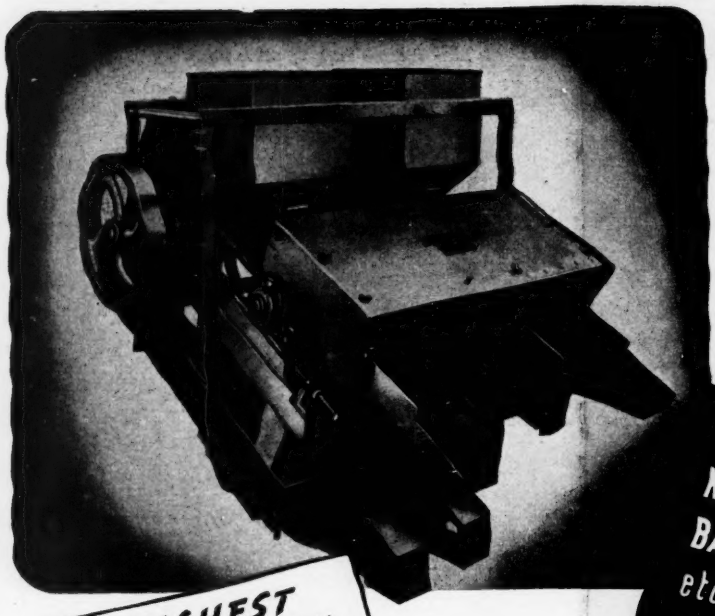

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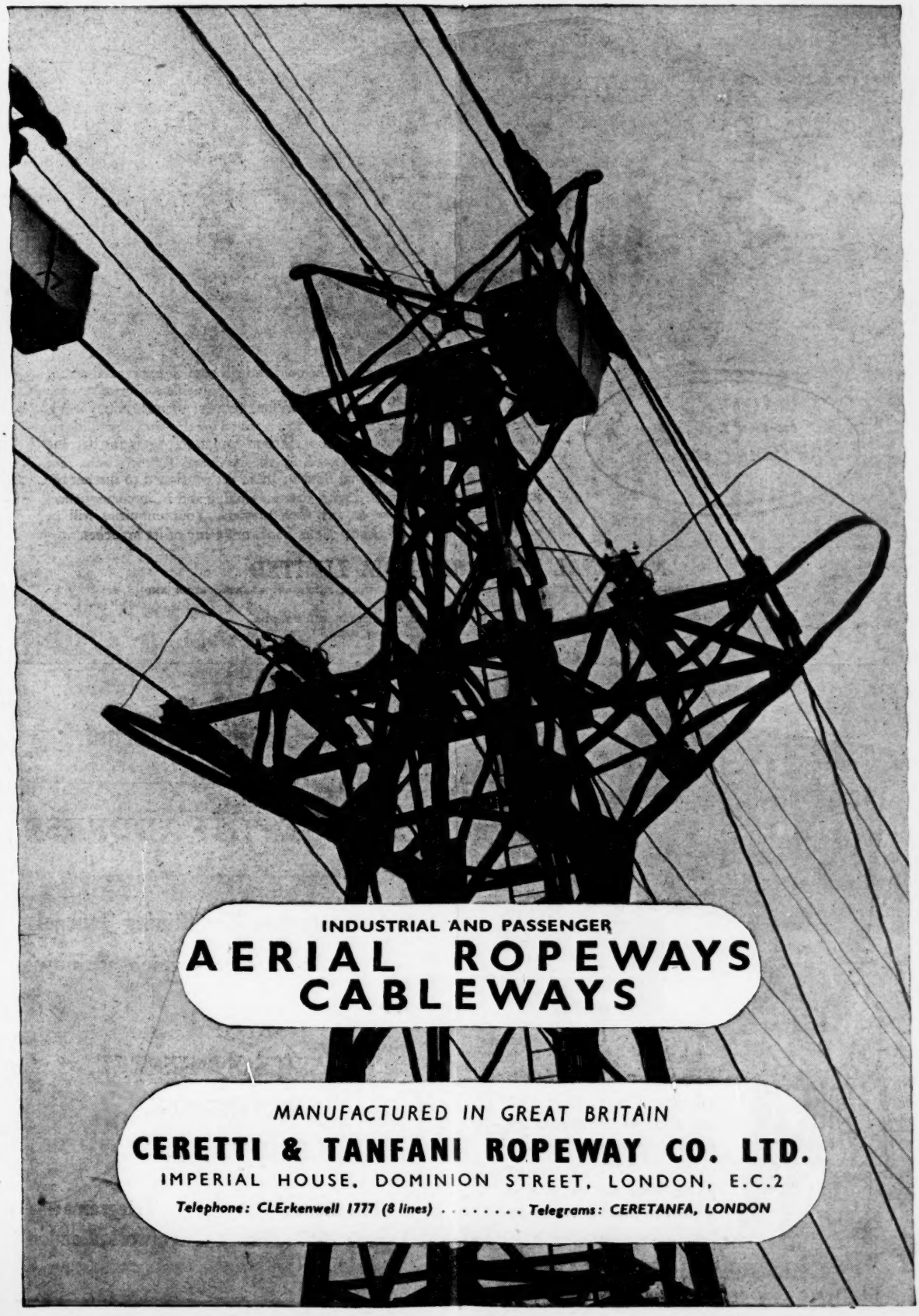
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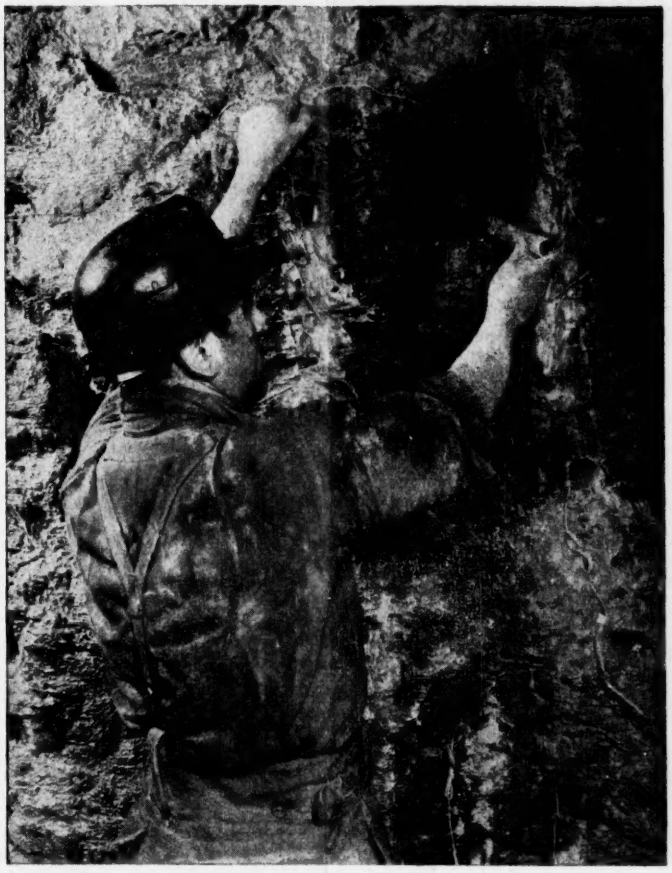

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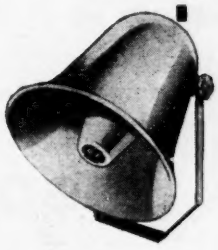

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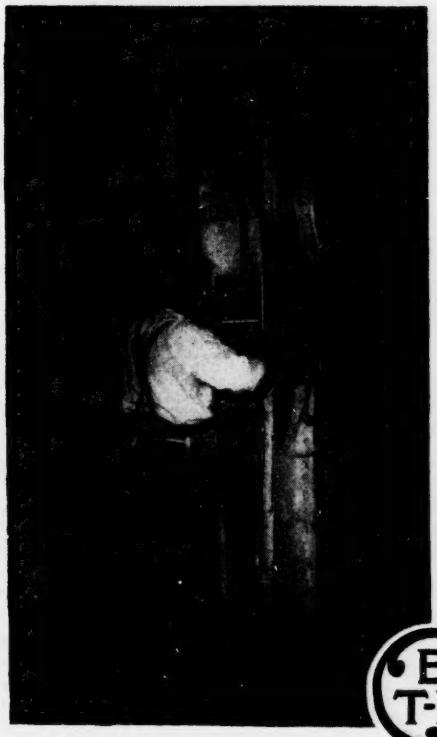

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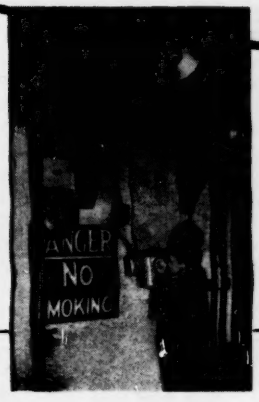

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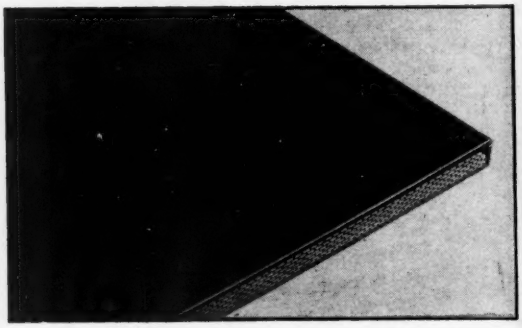

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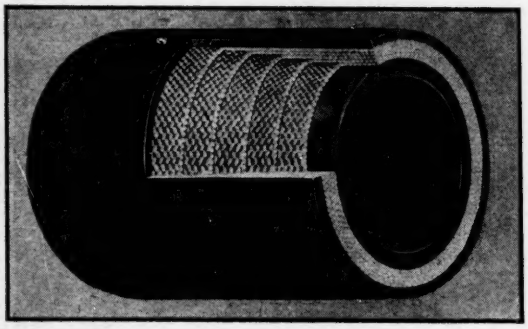

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NOTES AND COMMENTS

The Passing of Stalin

With the sudden death of the head of the Russian Soviets, Josef Vissarionovitch Dzhugashvili, christened Stalin by Lenin, at this critical stage in the evolution of world relations—came upon us suddenly last week, and has passed seemingly without any dislocation either internal or external. Possibly by reason of the sudden and unexpected demise of the Russian dictator, the world has taken the event very calmly and we are now left to speculate as to whether this reaction may correctly reflect its significance.

The eventual disappearance of Mr. Stalin from the scene of world affairs long formed the background to speculation as to what would ensue thereafter. Would his dominion, like that of Alexander the Great, dissolve into a number of separate minor satrapies or dynasties, or would the Soviet organization continue to preserve its "monolithic" integrity unimpaired? Time alone can show, but the actual transference of power to the *epigonoi* has been affected with complete smoothness and attended with official protestations of undeviating loyalty to the regime—the Lenin-Stalin tradition—which are entirely in line with the principles enunciated by these two founders of the Soviet order. The only objective development which can be detected at present is the reversal of the evolution towards a broader based organization announced by Mr. Stalin in the autumn of last year.

Mr. Malenkov and his associates appear to have reverted to the narrow distribution of powers which his predecessor seemed prepared to discard in his last days. It may be that they fear, at the present moment, any measure of decentralization, and that this move may be merely a deferring of recent plans; but, like everything connected with Soviet policy, it would seem premature to attribute too much importance to the change. The Soviet theory is that Mr. Stalin scrupulously maintained the original principles laid down by Lenin and that only natural evolution is to be seen in such changes as appear to have been made, and that similarly, the Malenkov-Beria regime will maintain this evolution and will seek its inspiration along the same lines. There is a tendency in the speeches of the leaders at Mr. Stalin's funeral to emphasize the duty to consolidate the "Soviet multi-national State," while at the same time emphasizing its foreign policy of peace and friendship between the peoples of all countries in external affairs and the Lenin-Stalin "axiom" of peaceful co-existence and peaceful competition between the two different systems, the capitalist and the socialist, being possible. There is, of course, a strong flavour of unreality in the conventional Communist denunciations of the Western Union of Powers, but if the Soviet leaders could be trusted to be satisfied with the unification of the Iron Curtain countries and China and forego the urge for international domination, a *modus vivendi* might be within sight.

Stalinism may have been fundamentally the image of Leninism but he managed to evolve largely from the original concept. Will Malenkov do the same? May we hope, as Mr. Dulles has suggested, for the gradual emergence of a new spirit? Possibly the Politburo feels that they have "bitten off all that they at present can chew" and desires time for economic digestion. Even Stalin himself may have been evolving, in his last proposals, in this direction towards the conception of "live and let live." Communist stimulation of revolutionary activities within the Free Nations may be a touchstone of their future intentions.

The emphasis placed in the funeral orations of the Soviet leaders on the importance of developments in the Far East and especially in the New China domain of Mao Tse-Tung may be significant of a new orientation of Soviet external policy coupled as it is with the appointment of Mr. Kuznetsov, the Deputy Foreign Minister, as Soviet Ambassador to Communist China, but clearly we can do no more at present than observe that the change, which has taken place, has been carried out with unexpected smoothness and share the hope expressed by Mr. Dulles that a new spirit may prevail in the world while noting Mr. Eden's disclosure that the United States and British leaders have discussed Russia and that the discussions between the Allied statesmen have been most useful for peace.

Tariff Policy in the United States

The issue of maintenance—or even intensification—of United States tariff protection as against the freeing of international trade between the Republic and the Free World is one of the major economic issues which President Eisenhower's administration must face. Traditionally, the Republican administration has favoured the building up of tariff walls whilst theoretically the Democratic Party has favoured tariff liberalization. Faced with the declining tendency in metal and mineral prices the mining interest in the U.S., more particularly the West, is generally demanding increased protection against foreign raw materials and is particularly opposed to any extension of the Reciprocal Trade Agreement Act and can stress the recent closing down, now progressively being reported, of the mines and refineries at the present time. The issue has recently been increasingly stressed by the reports of the Public Advisory Board of the Mutual Security Agency, and the Committee for Economic Development and has, no doubt, figured in the discussions upon which Mr. Butler and Mr. Eden have been conducting in Washington. These reports are, of course, the tail-end of the last Democratic administration and cannot be taken to represent the mind of the new Republican order. At the same time President Eisenhower has signified his intention of supporting an extension of the Reciprocal Trade Agreements due to expire at the end of June 8. Metals and minerals are one of the most important branches of trade and present the problem in sharpest contrast. It is widely recognized that it is illogical to seek to stimulate American aid in the way of subsidizing expansion of mining activities abroad while retaining the tariffs which limit the opportunities for profitable disposal of the proceeds. One line suggested by the report of the Republic Advisory Board is the lowering or elimination of duties on metals and minerals in which the United States is deficient, as well as the removal of all duties on petroleum imports. The course of events since the end of the war, since when United States exports have increased faster than imports, points to the necessity of gradually bringing to an end *ad hoc* expedients and the adoption of measures based on economic reality. At the time of the Presidential Election it was a general impression that President Eisenhower rather than the Republican Party had won the election and that this foreshadowed probable strain between the President and the Republican majority in Congress. How it will develop, it is impossible yet to judge, but there can be no doubt that the outcome will be very important in connection with the international business in metals and minerals.

Far Eastern Conditions Surveyed

The annual statement by the chairmen of the Chartered Bank of India, Australia and China, and the Mercantile Bank of India, traditionally provide a sound economic assessment of Fast Eastern conditions.

While the Korean war has forcibly directed world attention on Far Eastern affairs, this was in fact but a shift in the focusing points, for not only do the Far Eastern countries supply the world with a large portion of many of its essential raw materials, but also their post-war struggle to divest themselves of all forms of political and financial tutelage has made the Western world more conscious of the Far East than at any time previously.

Mr. V. A. Grantham, chairman of the Chartered Bank of India, Australia and China, in his annual statement accompanying the Bank's report and accounts for the calendar year 1952, puts forth conclusive evidence that the fall in commodity prices has resulted in a relative deterioration in both the economic and financial spheres in practically every country in which the Bank operates in the East. Moreover, they did not escape the similar kind of fiscal impositions suffered in many of the Western countries such as government over-spending. However, Mr. Grantham stresses the point that while conditions economically and financially deteriorated considerably almost everywhere in the East over the past year, it would be wrong to deduce from this the consequences which might be expected to flow from the adverse economic conditions experienced. Naturally, he says, the consequences cannot be entirely avoided but the capacity for self-discipline and recovery of peoples governing themselves for the first time may well prove to be greater than has been hitherto suspected and, he concludes, it would be unwise to fail to take that capacity into account.

Sir Kenneth W. Mealing, chairman of the Mercantile Bank of India, in his annual statement to shareholders, expresses much the same view. In his exhaustive survey of the economic and financial conditions prevailing in the countries the Bank serves, Sir Kenneth draws attention to the disturbing effects of the almost universal fall in the prices of the main products produced by the Far Eastern countries. But, like Mr. Grantham, he states that having regard to all the difficult circumstances, standards of living, industrial output and trade have suffered remarkably little. This calls for no complacency he declared, for populations continued to rise, food shortages are a continuing and perhaps increasing anxiety, so that for years to come the economic stability of South East Asia will continue to be of prime importance to the free world.

General Trends in the Spanish Mineral Industry

On page 302 of this issue, an article dealing with the current developments planned for the Spanish iron and steel industry makes prominent mention of the new integrated plants at Avilés on the North Western seaboard of the country.

An export order worth £6,000,000 has been placed with manufacturers in the United Kingdom for equipment needed for the installation at Avilés, for which site levelling operations have already commenced. The companies concerned, as mentioned in our article, are Head Wrightson, Wellman Smith Owen Engineering, Davy and United Engineering, and English Electric.

This group has been represented in the two years of negotiations leading up to contracts by the Metallurgical Equipment Export Company of London. This company is owned and was formed by the companies named and other "British metalworks plant manufacturers," to coordinate export activities and to offer foreign buyers a more complete source of supply for the varied processing equipments needed in a steel or non-ferrous plant. The chairman of the newly-formed company conducted the negotiations in Madrid.

The total value of the work to be put in hand is in the neighbourhood of £10,000,000, but direct orders to this country total only the £6,000,000 mentioned. The British Companies have agreed to place their technical drawings at the disposal of the Spanish manufacturers, who will undertake simpler constructional and low conversion cost workings. This measure has been adopted in order to allow Spain to avoid balance of payment difficulties. Payment to the United Kingdom companies will be made out of Spain's current sterling earnings and the contracts are backed by the Board of Trade Export Credits Guarantee Department. German manufacturers have secured orders for coke ovens and Swiss for power station equipment worth £650,000.

While it is felt that Spain has over-expanded her iron and steel manufacturing capacity, the Spanish Minister of Industry, Don Joaquin Planell, recently stated in Madrid that the increased production of certain industries reflected governmental policy to foster higher output of raw materials and basic products.

Results of Safety Investigations in the British Coal Mining Industry in 1951

(From Our Coal Correspondent)

The National Coal Board have decided to raise the pithead prices of coal by 10 per cent from March 2 onwards to meet higher costs of production. This will result in an average increase of 5s. 6d. per ton to the home market. Export prices are to remain unchanged. It is expected that this will enable the Board to pay its way in 1953 but it will not enable them to wipe out the expected deficit in the final accounts for 1952 which will probably be substantial because of increased wages, higher costs of materials and a drop in the output per manshift.

It seems, however, that the labour situation has taken a turn for the better. The threatened crisis over wages has, for the time being, receded and the Board and the National Union of Mine-workers have agreed to co-operate on measures to improve production in 1953. Proposals have been put forward in some parts of the coalfields for joint action by management and men to run marginal pits more economically and this may be a sign that the workmen themselves will in future take a more active interest in the technical problems of the industry.

DANGERS FROM CONVEYORS

The thirtieth annual report of the Safety in Mines Research Establishment of the Ministry of Fuel and Power, published recently, deals with investigations carried out during 1951 into underground fires, the production and control of dust and engineering and metallurgical problems in coal mining. A special fire-search team was formed in 1950 to study the circumstances attending the Creswell Colliery disaster when a fire on a trunk belt conveyor resulted in the loss of 80 lives. After some preliminary experiment to verify the possibility of igniting a rubber-covered belt by friction when it is caught by an obstruction and ripped, attention was directed to the modes in which a smouldering fire can develop into a conflagration. The chief factors involved in this transition are ventilation and the degree of preheating of the rubber.

In one experiment a length of rubber-covered conveyor belting was laid on idler rollers at intervals of 5.5 ft. in a gallery which contained no inflammable material other than the belt itself. When one end of the belt was ignited the fire spread slowly, and fitfully as it passed over the idlers because these conducted heat away, and obstructed the passage of air to the combustion zone. In an air stream moving at 600 ft. per min., the belt burnt away at an average rate of 7 ft. per hr. but an eightfold increase in the rate of burning was produced by increasing the air speed from 300 ft. per min. to 1,000 ft. per min. Particular attention was given in these experiments to the rate of vitiation of the air on the downstream side by noxious fumes and gases, since poisoning and suffocation are the greatest hazards in underground fires of this kind. It was found that the mean concentrations of such products of combustion on the downstream side were doubled by increasing the air speed from 300 to 1,000 ft. per min.

A change from smouldering to rapid flaming is unlikely to take place if no radiant heat from another source preheats the rubber to a high temperature. Rubber belting is one of the materials whose inflammability is greatly influenced by exposure to radiant heat and, to obtain data on this point, a piece of belting 3 ft. square was suspended with its flat surface vertical and parallel to the direction of motion of the air. When the leading edge was ignited in an air stream moving at 400 ft. per min., burning continued for two hours and the fire then died out, leaving about a third of the material unconsumed. When the experiment was repeated with two pieces of belting of the same dimensions suspended a foot apart, and the two leading edges were ignited simultaneously, the two pieces burst into flame within five minutes and both were completely burnt out in a quarter of an hour.

ESTABLISHMENT OF FIREPROOF ZONES

It is clear, therefore, that a serious conflagration can occur if two parallel lengths of belting are ignited or if other inflammable material in the neighbourhood of the belt is set on fire. The report stresses the importance of creating fireproof zones where such conditions can not arise when a trunk conveyor is being installed, but this presents a difficult problem, particularly in a coal mine. In view of the efforts which are being made to solve the problem by using less inflammable materials for belt coverings, such as P.V.C. and neoprene, the team have carried out some preliminary experiments to determine the nature of the gases and vapours given off by these substances when they are heated to high temperatures. When tested in a silica tube in a stream of air, or nitrogen, at 750° C. all types of belting give off carbon monoxide. In addition to this, neoprene and P.V.C. covered belting also give off smaller quantities of hydrogen chloride, which is about twenty times more toxic than carbon monoxide. Neoprene produces hydrogen chloride in more dangerous concentrations than carbon monoxide whilst P.V.C. produces both in concentrations of about equal toxicity.

DETECTION OF INTERNAL FLAWS

A good deal of attention is being given at the Research Establishment to the development of radiographic, magnetic and ultrasonic methods of detecting internal flaws in the metallic parts of colliery equipment. The increasing use of modern methods of welding calls for the application of these methods of testing and they will undoubtedly also help to make statutory routine testing of winding and haulage equipment more effective. During the year two winding-rope breakages were reported. This has been the average number of breakages per annum for the last 10 years out of more than 3,000 winding ropes in use. Ninety-one rope samples were submitted for examination and testing during the year to determine whether the statutory life of the ropes could be extended beyond the normal 3.5 years by a period of six months. Extension was allowed in all but three cases and this meant a saving of 44-rope years of service. In the course of the last 15 years, 96.5 per cent of such applications have been granted for galvanized ropes against 83.5 per cent for ungalvanized ones.

Progress is being made in researches on dust and special efforts are being made to improve methods of assessing the quantity of dust in air-borne samples and the mineralogical content of the particles. Efforts are also being made to simplify the techniques of sampling and counting. Experiments on rotary drills have confirmed earlier findings that the amount of dust produced depends only on the rotational speed of the drill and is independent of the pressure and the rate of feed. The dust produced per foot of hole drilled is thus almost inversely proportional to the rate of penetration when the drill rotates at a constant speed.

A Brief Outline of the Mount Isa Copper Smelter

By R. V. ANDERSON

The author is general superintendent of smelters, Mount Isa Mines Ltd., of Queensland, Australia, and the following article is an extract of a paper submitted to the first ordinary meeting of the Australian Institute of Mining and Metallurgy held in Queensland in August of last year. Comprehensive details of the several procedures used in smelting operations are given, but it is noted that final decisions have yet to be reached concerning the method of refining Mount Isa blister copper. Meanwhile, it is reported from Melbourne that the Mount Isa project is aimed at doubling Australia's copper production. The chairman of the company recently announced that production would come from 4,000,000 tons of 4 per cent copper ore in a hanging wall over the silver-lead-zinc deposits. Production has already begun and will be accelerated to between 40 and 50 tons per week, giving an annual output of between 15,000 and 18,000 tons on the basis of a seven-day week.

The equipment and general smelter layout for the Mount Isa Copper Smelter were designed by American engineers associated with the American Smelting and Refining Company and by Mount Isa staff engineers. The final choice of site was dictated by the need for building the smelter near the existing Mount Isa powerhouse to enable full use to be made of the steam from the waste heat boilers. Although much excavation work was necessary before concrete foundations could be poured, the location lends itself to further expansion should it become necessary. The plant is designed and constructed to involve straight line smelting operations, which include the following major steps in the overall scheme : 1, charge make-up ; 2, roasting ; 3, reverberatory smelting ; 4, converting ; 5, refining ; 6, casting.

CHARGE MAKE-UP AND ROASTING

A system of proportioning bins is provided for preparing the feed mixture for the roasters. Sulphide concentrate containing 24 per cent copper will be delivered by belt conveyor from the filter plant to the smelter storage patio. This is a large roofed concrete floor that provides a maximum storage capacity of 8,000 tons of concentrate. Eight proportioning bins located below but adjacent to the south end of the patio will be used for actual charge make-up from which concentrate ore and flux will be proportioned to the feed belt and conveyed to the roaster feed hoppers. Four of the proportioning bins, 80 tons capacity each, will receive concentrate reclaimed from the patio. The remaining four bins, 77 tons capacity each, will receive crushed ore and flux from motor dump trucks hauled there from the crushing plant.

The practice of calculating the roaster charge to produce the desired reverberatory-furnace slag will be followed. As concentrate, ore and flux will be reasonably constant in analysis and predetermined, the proportioning bins will serve the same purpose as a bedding system. Copper ore and silica flux will be crushed to minus ¼ in. in size on the basis that the finer the charge the more easily it is roasted. This will also tend to produce hotter calcines for faster smelting with the same sulphur elimination.

Two Garfield type C and W eight hearth roasters comprise the roasting equipment. The roasters are located favourably to the reverberatory furnace ; the layout allows a very short haul of calcines to the furnace on a straight run of track, thus eliminating trouble encountered in long hauls and curved tracks. The eight 19½ ft. diameter hearths of each roaster are all constructed of fire brick. Oil firing will be used on the 6th hearth for ignition with auxiliary firing on either the 4th or 8th hearths if it is needed. Moisture content of charge and units of sulphur elimination govern the rate of firing.

Operation of this type of roaster, while not difficult, warrants good supervision to minimize breakdowns and costly repairs. Speed of the revolving rabble arms should not be too fast, 50 to 55 sec. for one revolution being top speed. Too much feed on the hearth causes piling up of the charge in front of the arms and puts undue strain on arms, columns, and driving gear. Close control of rate of firing is required for proper sulphur elimination and production of hot lively calcines. Over-firing causes dead slow smelting calcines and the excessive heat results in arms warping and sagging, which leads to breakage. Arms must be checked closely to keep them tight in their sockets or the rabble blades will foul the hearth.

Roaster charge entering the top of the roaster by pan feeders will be discharged as calcines from the bottom hearth at a temperature of approximately 1,100° F. into two calcine hoppers which in turn will be discharged into the larry car. All connections with the points of discharge of calcines to larry car will be vented for dust prevention. A Buell cyclone type dust collector will be provided for roaster dust collection. Gases will be exhausted from it by a suction fan through a 4 ft. diameter steel flue to the smelter stack. A Cottrell unit has not been provided. The absence of precious metals in Mount Isa copper ore was the determining factor in deciding to install fans, cyclones, and multiclones in place of a costly Cottrell unit. Multicones in place of polycones for the converter flue dust collection (because of higher efficiency), and flat blade fans for exhausting smoke containing acid fumes is the general practice of A. S. and R. copper plants in America and has been followed at Mount Isa.

REVERBERATORY FURNACE SMELTING

Reverberatory furnace operations will follow the general practice of the A. S. and R. copper plants, namely, Garfield, Tacoma, Hayden and El Paso. It is initially planned to produce 1,500 tons of copper per month. Charge calculations indicate that with approximately 20 per cent copper and 25 per cent sulphur on the roaster charge 3,950 tons of 38 per cent copper matte will be produced allowing approximately 5½ units of sulphur elimination at the roasters. Fixing the grade of matte is not entirely a roasting problem, however, in reverberatory furnace smelting, as the grade of matte produced depends on the copper-sulphur ratio of the roaster feed and on the amount of sulphur eliminated in the roasters and in the reverberatory. As the reverberatory furnace is operated to smelt a maximum tonnage of solid charge with the best possible fuel ratio, sulphur elimination in the reverberatory itself is not important. It is noteworthy that the Mount Isa furnace charge will contain sufficient quantity of crude copper sulphide ore, containing about 9 per cent CaO and 5 per cent MgO to eliminate the need for any extra limerock flux for the desired reverberatory slag.

The reverberatory furnace will be 17 ft. wide by 90 ft. long inside dimensions with 18 in. thick magnesite crucible, 24 in. thick silica sidewalls, and 20 in. sprung silica arch. Water-cooled sidewall jackets in the combustion zone area will not be incorporated in the furnace construction. It is contended that as the furnace will not have to be heavily fired to smelt available tonnage, sidewalls can be maintained by silica slurry patching in conjunction with arch slurry maintenance. The uptake flues to boilers are Laclede Christy design, a flat suspended firebrick roof and silica sidewalls. Charge will be fed to the furnace by dropping out of the larry car through two Wagstaff guns, one mounted on each side of the furnace approximately 12 ft. back from the burner wall of the furnace.

Pulverized coal as fuel for the furnace will be delivered directly from the mills to four 8 in. burners placed at 4 ft. centres in the furnace bridgewall. No intermediate storage of pulverized coal from mills to furnace has been deemed necessary. Any combination of two out of the three Babcock and Wilcox type E pulverizers can be in operation at one time delivering a maximum of 5,200 lb. coal per hr. per mill through a 14 in. header to the burners. Air to mills will be tempered by a 5,000 c.f.m. fan to maintain 150° F. temperature of coal-air mixture at outlet of mills. Approximately 50 per cent of air required for combustion will be passed through the burners with maximum velocity of coal-air mixture at burner outlet of 116 ft./sec. burning 55 tons of coal per day. Hagan control instruments will be used for automatic control of all air, fuel, and draft requirements to the furnace operation.

PRE-HEATING OF PRIMARY AIR

One feature worthy of mention in the furnace installation is the preheating of the primary air to pulverizers and also of the secondary air admitted at the burners for combustion. The two preheaters will utilize 675° F. boiler waste heat gases and will be located in the flue system between the Bluell cyclone dust collectors and the exit flue to the smelter stack. They were designed by Babcock and Wilcox, of London, who were under contract to supply the two waste heat boilers and the coal pulverizer mills. Air at 400° F. will be exhausted from the preheater outlets by a 12,000 c.f.m. 16 in. w.g. forced draft fan and conducted through pipes to the burners and to the primary air fan serving the coal mills.

The preheated air will be collected in turn by the primary air fan that has a capacity of 7,500 c.f.m. 33.2 in. w.g. at 1,950 r.p.m., driven by a 70 h.p. motor and designed to withstand temperatures up to 400° F. The primary air fan will be in circuit with the attempering air fan and will be set to deliver 6,150 c.f.m. at 245° F. to the pulverizer, the temperature being regulated by automatic damper control on preheated and attempering air mains

Matte tapping and slag skimming should not cause any undue trouble when operations commence. Slag will be skimmed through the sidewall near the uptake, and granulated into a tank using 1,000 gallons of water per min. at 160 ft. head pressure through a 10 in. pipe flattened to make a nozzle 1 ft. 4in. x ¼ in. in section. Low pressure water at 2,000 gallons/min. will supply volume for cooling. The cooling pond has an area of 2,600 sq. ft. and a capacity of 97,000 gallons at 6 ft. depth. It is considered that more than ample water has been allowed for cooling and granulation of approximately 200 tons of slag per day. The granulated slag will be picked up by overhead crane and grab bucket and deposited into two draining bins. A belt conveys the slag from drainage bins to storage bins mounted over a railway line from which it will be hauled in rail trucks to the Black Star section of the mine and used as back fill.

CONVERTING OPERATIONS

Starting up the new copper smelter at Mount Isa with inexperienced labour is likely to be difficult and the usual "starting up pains" can be expected. As far as converter practice is concerned there will be nothing unusual. On the basis of producing 50 tons of blister copper per day one converter will have sufficient capacity to treat the 130 tons of matte produced by the reverberatory furnace. It is possible that only two 8 hr. converter shifts will be required to put out 50 tons of copper.

Matte and copper will be transferred in cast steel ladles and the converter slag will be returned molten to the reverberatory furnace. By mixing converter slag with the slag formed in the reverberatory furnace the reaction with sulphides and siliceous materials in the reverberatory feed reduces the magnetite in the converter slag and increases the silicates to the point necessary for a satisfactory reverberatory slag that can be discarded.

Since the reverberatory matte that will be produced will contain little or no lead with other impurities very low, a very high grade blister copper can be expected. Converter lining life is expected to be good for the reason that it will not be necessary to run the converters as hot as is customary where speisses, mattes, and other high impurity materials are smelted and as much impurity as possible must be removed. The possibility of keeping a protective magnetite coating on the converter lining is greater where the lead content of the matte is low.

Briefly, the Mount Isa converting department consists of two 10 ft. x 20 ft. basic lined Pierce Smith type converters with one left- and one right-hand assembly. They will be serviced by two 40 ton A.C. powered overhead travelling cranes of 50 ft. span. Each converter is equipped with 32 1¼ in. tuyeres spaced at 6 in. intervals. Converter blast air will be supplied by one Ingersoll Rand steam turbo blower which has a rated capacity of 14,000 cu. ft. of air per min. at 14 lb. per sq. in. pressure. The blower is located in the power house and will deliver its air to the converters through a 22 in. diameter pipe. A duplicate blower unit is on order. The converters will be turned by a 40 h.p. Holman reversing vee engine air motor operating through reducing gears and centrifugal clutch. Compressed air to the motors will be supplied by a compressor located at the power house to maintain air in a receiver at required pressure. Both converters will be equipped with moveable punching platforms for ease in tuyere punching, which will be done by hand labour.

Converter shells are constructed of 1 in. welded steel plate. The lining will be burnt magnesite refractory 18 in. thick at front, bottom and tuyere zone, and 12 in. thick over the top. The manifold pipe will be 12 in. in diameter with 2 in. diameter seamless flexible tubing connecting each tuyere to the manifold. Pressure gauges and air flow meters will be used to record main blast air conditions at all times.

REFINING AND CASTING

Final decisions have yet to be reached concerning the method of refining Mount Isa blister copper. A holding furnace is being provided, together with a casting wheel that will enable blister copper to be cast into 250 lb. cakes. If fire refining is carried out, a refining furnace that will also be served by the casting wheel, will be provided.

On the initial start up of operations it should be possible to blow, skim, and blister copper in the holding furnace in order to cast a smooth cake. The holding furnace is a 10 ft. x 20 ft. vessel lined with a 12 in. magnesite brick bottom and with 9 in. magnesite over the top. A 3 ft. square opening in the top at one end will be used for charging molten blister copper which has been transferred from the converter. The top opening will also be used as an outlet for furnace gases. An oil burner mounted on the opposite end can rotate with the furnace as operations require.

The 250 lb. blister cakes will be cast with a lug on each of the four corners. The lug for each corner was especially designed to facilitate mechanical handling. The cakes will be removed with a jib crane and air hoist from a platform at the discharge end of the bosch conveyor and will be placed on edge so that a lift truck can remove a load of cakes and transfer either direct to rail trucks or to the storage platform.

Complete control of the casting wheel, tilting spoon ladle and holding furnace operation will be accomplished from a shielded operator's pulpit, positioned on the pouring side of the holding furnace near one end in order to have complete view of all casting operations.

Modern Developments in the Spanish Iron and Steel Industry

A recent order worth £6,000,000 placed with four owner companies of the Metallurgical Equipment Export Company of London for equipment destined for the proposed integrated steel plant at Avilés, has drawn attention to the Spanish steel industry. In the following article, condensed from *Monthly Statistical Bulletin Vol. 28 No. 1*, published by the British Iron and Steel Federation, a brief history of Spain's iron and steel industry is given, as well as a summary of her home and colonial iron ore deposits, together with comprehensive notes on the proposed Avilés plant. At the termination of its published report the Federation points out that despite all optimistic regard, Spain cannot be imagined as an exporter of iron and steel or highly finished iron and steel products in the foreseeable future. It must therefore be presumed that the planned steel output would in maximum be diverted to the home market and the conclusion is reached that Spain is again over-expanding her iron and steel making capacity.

The Spanish iron and steel industry is mainly centred in the vicinity of the northern coast or is actually on that seaboard. It is thus set in districts of rich, low-phosphorous ores, which are now practically exhausted, although the intensive working and continued exportation of Spanish ore, a traditional policy in the past, has provided a financial basis for the construction and equipment of certain of the existing steel plants in the country.

Originally production was centred in the regions of Asturias and Vizcaya, and Spain entered the present century with an iron and steel productive potential that was technically out of date but of dimensions considerable enough to place her in more than favourable comparison with the less industrialized nations. It was more than adequate to supply the requirements of home market jobbing consumption.

In order to cut down unnecessary competition that itself was productive of wastefulness, and to increase efficiency by rationalization of production, a series of horizontal and vertical mergers began. These placed the industry on a firmer financial basis and provided the main concerns with their own sources of supply of the basic raw materials. Thus, during the major years of the 1920's a period of expansion opened and, backed by a growing home demand, a large-scale modernization programme of existing plants was undertaken and new plants were built. With the help, therefore, of cheap foreign coal and substantial scrap importation, the ingot output of Spain rose from 167,000 tons per annum at the beginning of the century until the peak production quota of 1,021,685 ingot tons was reached in 1929. The Civil War reduced output in 1937 to the 1903 level of 223,000 tons.

At the present time the industry is modernizing and expanding once more to supply a growing demand. The initial step has been to prepare for operation on a greatly increased proportion of pig iron. One firm is experimenting with a Krupp-Renn pilot plant, sponge iron is being produced by the Swedish Hoganas process, and non-traditional ironmaking methods such as low shaft electric furnace and the Bassett rotary kiln are being considered to enable better use to be made of the poor quality Spanish coal. Any process involving heavy consumption of electricity is at the moment erased owing to the prevailing power shortage.

Capital outlay at the initial stage of the modernization and re-equipment programme totalled Ptas. 800,000,000 or approximately £8,000,000 up to the end of 1951. Shortage of foreign currency proved an obstacle, and is expected in addition to retard the second stage, which involves the renewal and expansion of steel furnaces and rolling mills to a planned outlay of Ptas. 1,900,000,000 or approximately £1,900,000. The target set for the end of 1956 is an annual production rate of 1,550,000 tons of coke, 1,250,000 tons of pig iron, and 1,600,000 tons of steel ingots.

Geographical situation of the iron and steel industry in Spain

The principal iron ore mining regions of Spain are Cantabria, mainly Vizcaya and Santander, Léon comprising the Coto Wagner, Central-Mediterranean comprising Granada and Almeria, and there is included a small deposit of good quality ore in Saragossa at Tierga.

The most important iron and steel works are still centred in Vizcaya and to date these plants have smelted approximately 40,000,000 tons of ore of the total 220,000,000 tons mined locally. However, the richest ore of 52.7 to 56.8 per cent Fe content are now almost exhausted and only a small quantity of the 51 to 55 per cent Fe ores remain. Total remaining usable reserves in this area are estimated at 20,000,000 tons, the majority ranging from 38.8 per cent to 41.5 per cent Fe content and requiring calcining before use. The Santander deposits are more difficult to work than those of Vizcaya and consist mainly of red and brown haematites of up to 52 per cent Fe, 1 to 3 per cent Mn, and 6 to 7 per cent Si content. Some 10,000,000 to 12,000,000 tons still remain and the district currently produces approximately 215,000 tons of saleable ore per annum.

Other iron ore regions are Galicia with an estimated reserve of approximately 50,000,000 tons which include a large proportion of the silica-phosphoric type at present unsaleable owing to composition and difficult location, the adjoining provinces of Teruel and Guadalajara of which two of the three main sections, namely Setiles and Ojos Negros, contain an estimated 80,000,000 tons of 53 per

cent to 54 per cent Fe content; Almeria left to-day with a mere 12,000,000 tons of reserve comprising a brown haematite of 48 per cent Fe, 6 per cent Si and 1.5 per cent Mn content; and the important region of Granada possessed of known reserves of approximately 50,000,000 tons of 46 per cent to 47 per cent Fe content.

Asturias and Léon both possess considerable and little-worked deposits, mostly of the high silica type and averaging 30 per cent Fe. The extent of the Cato Wagner deposit near the Villablino coal field has been variously estimated at between 28,000,000 and 50,000,000 tons of maximum 55.6 per cent Fe, 6 to 10 per cent Si, 0.8 per cent P, and 0.03 to 0.59 per cent S.

In so far as Spanish overseas possessions are concerned, four companies are authorized to pursue mining operations in Spanish Morocco. The reserves of iron ore in this territory total some 60,000,000 tons, or about 10 per cent of Spain's total available resources. Some 75 per cent of Spanish Moroccan output is exported to European countries, mainly the United Kingdom.

THE AVILÉS PLANT

Meanwhile in the iron and steel industry it is believed that the extensive Asturias-Léon reserves may prove to be the future mainstay of the Spanish industry, provided that suitable methods of preparation and reduction can be developed. The activities of the proposed new integrated plant at Avilés may eventually be based on the ores exploited from that region.

Because of the difficulties faced by the Spanish steel industry during recent years, namely high scrap usage, obsolete equipment and the prohibitive cost of modernization, it is claimed in official quarters that iron and steel cease to be an affair solely connected with private enterprise and become a national problem. The Instituto Nacional de Industria, a state body set up in 1941 for the protection and development of home industry, investigated the technical and economic aspects of the problem in collaboration with a London firm of consulting engineers. The outcome was a Government proposal to establish a new integrated plant financed by the Instituto and private capital, with foreign participation limited to 25 per cent. The existing iron and steel industry did not participate, and the Instituto inaugurated the new company alone, leaving the opportunity for possible future participation by Spanish or foreign capital.

From this beginning there came into being in July 1950, the Empresa Nacional Siderurgica S.A., known as Ensidesa, with the object of erecting at Avilés on the coast of Asturia a new integrated plant for the production of 600,000 to 700,000 tons of steel per annum. The total capital was Ptas. 1,000,000,000 of which Ptas. 400,000,000 was paid up. Official conditions imposed on the project are designed to aid the national iron and steel industry as a whole, for the present supplies of ore or coal to existing works must not be disturbed, and Avilés must operate on a high proportion of hot metal and utilize only its own scrap. The latter regulation is framed to avoid a deterioration in the already difficult scrap situation, although scrap imports are envisaged when the international market becomes more normal. The former restriction concerning ore and coal supplies, implies an increase in current output and the instigation of new mining properties.

This policy of *laisser faire* in regard to the existing industry, however, cannot be followed in so far as the labour force is concerned, as a certain proportion of the initial labour force for Avilés will of necessity be drawn from workers already employed in the steel works of Spain. Yet in the later stages it is expected that the work force will eventually be drawn from the local agricultural population and a training school is being built near the plant.

It is claimed that technicalities of production and supply do not present any pressing obstacles, as it is stated that difficulties in the production of a usable metallurgical coke from local coal have been overcome. Laboratory tests of a blend of suitably prepared and washed grades has yielded a satisfactory coke. In similar fashion, no unsurmountable difficulties are anticipated in connection with the proposed blast furnace burden comprising high-silica ores and iron pyrites.

Costs are regarded optimistically. Considerable tax concessions will prove of benefit owing to the "national interest" involved, coal will be obtained from the Gijon and Avilés fields at a lower price than that paid by other European steel producers, ore supplies from Galicia and Léon will be transported more cheaply as to rate than those of foreign importers, and wage rates will be lower when studied in comparison with those of other steel-producing countries.

Because of these considerations, and because of fullest possible mechanization with operating equipment of similar standard and capacity to that installed elsewhere in Europe, it is estimated that the Avilés production costs should be commensurate with those of other steel-producing countries in the European zone.

Although current costs of plant and equipment are high, these prices are considered as justified by the large production tonnage envisaged and by the larger throughputs of individual products. Annual saving on coal consumption on a proposed ingot output of 600,000 to 700,000 tons will be approximately 1,000,000 tons. It is considered that it would be more expensive to obtain this extra tonnage by modernization and expansion of the existing industry. The Avilés project will eventually provide an additional 1,500,000 tons per annum to Spain's steel output, a figure approximately double her present output. Excavation and site levelling operations are already in progress.

EQUIPMENT FROM THE UNITED KINGDOM

A group of British manufacturers have secured an export order worth £6,000,000 to supply equipment for Avilés. The companies concerned are Head Wrightson, which will build the ore preparation and blast furnace installations with the co-operation of Fraser and Chalmers Engineering Works, Wellman Smith Owen Engineering which will supply the open hearth steel-manufacturing plant, Davy and United Engineering which will manufacture the rolling mills, and English Electric, which will supply all major items of electrical equipment.

The following equipments will be installed at Avilés during the first stage of development. Coke ovens, two batteries each of 35 ovens, 1,000 t.p.d. output; blast furnaces, 1 x 1,000 t.p.d.; steel furnaces, 3 x 300 t. tilting o.h. and 1 x 600 t. active mixer; rolling mills, 1 x 42 in. blooming/slabbing and 1 x 32 in. 3-stand structural. The first stage of output will comprise 300,000 t.p.a. of billets, sections and rails. In the second stage an identical number of coke ovens will be called for, and blast furnaces will be a repetition of the primary stage. Rolling mills will be either 1 billet and merchant mill or 1 semi-cont. light plate and strip mill. A power station comprising a 30,000 kVA. turbo-alternator is to be installed, as well as an ore preparation and handling plant and a sinter plant.

COMPARISON OF TONNAGES

Initial production capacity of 350,000 tons per annum will be ready by late 1956 or early 1957 at Avilés. This quota, with the annual 800,000 tons currently produced from existing steelworks and the estimated possible increases of 500,000 tons per annum from the same source, will drive Spanish production to 1,650,000 tons per annum. Ample provision is being made to permit of future extensions which will be sufficient to achieve the ultimate plant output already indicated at 1,500,000 tons per annum.

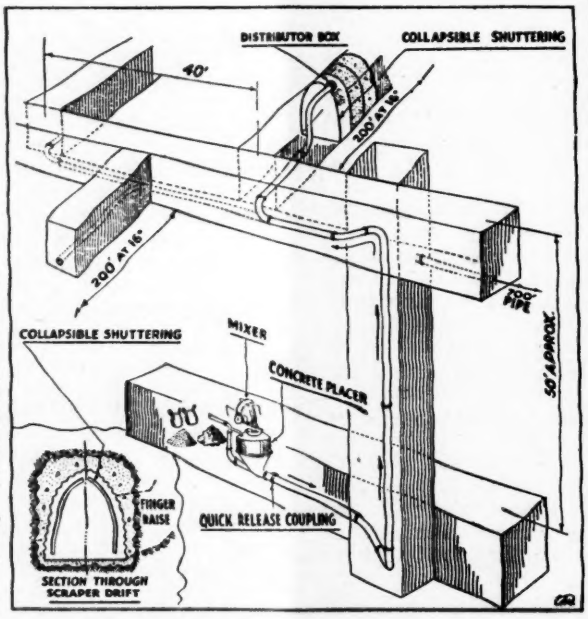
Pneumatic Concrete Placing at Nchanga Consolidated Copper Mines

A mechanized method of placing concrete has been introduced at Nchanga Consolidated Copper Mines, Northern Rhodesia, which effects saving in time and labour. The following article, adapted from *Optima*, Vol. 3, No. 1, a quarterly review published by the Anglo American Corporation of South Africa, tells how concrete is used at the Nchanga mine to support certain underground workings.

The method of supporting the underground workings in a mine depends largely upon the nature of the orebody, the system of mining and the geological characteristics of the adjacent strata. The Nchanga mine employs a mining system known as continuous caving which was described in *Optima*, Vol. 1, No. 1, and experience has shown that, in the conditions prevailing at that mine, concrete is the most economical material for the lining of scraper drifts and for similar uses in the mine. It has been estimated that more than 1,200 cu. yd. of concrete must be emplaced each month in order to maintain the scheduled rate of production from the mine. It is, therefore, important that this large amount of concrete shall be handled and emplaced as efficiently and as quickly as possible.

Before the new method was brought into use, scraper drifts were supported by reinforced concrete side-walls about 4 ft. to 6 ft. high, with timber cribbing up to the hanging. The materials for making concrete were hoisted up service raises in buckets and manhandled along the grizzley drive to the upper end of the scraper drift. There they were mixed by hand in a restricted space, laundered down the drift and lashed behind wooden shuttering.

This method was extremely slow and costly and necessitates constant repair at the finger raise brows.



The operation of the new method

The possibility of mechanizing the work of placing concrete was investigated at the mine. It was decided that, as a minimum requirement, mechanical equipment should be capable of delivering concrete, of maximum aggregate size to pass a 2 in. square screen, against a vertical head of 60 ft. and through piping at least 300 ft. long, with bends through 90° and compound gradients. A concrete pump capable of satisfying these requirements was available on the mine, but restricted space, insufficient headroom and the difficulty of dealing with pipe blockages, among other problems, indicated that the equipment could not be used satisfactorily at Nchanga. It was, therefore, decided to experiment with pneumatic placers.

Experiments were carried out over a period of eight months. Several difficulties had to be overcome: the stone tended to segregate from the fines while the concrete was being placed in position; a method had to be found to avoid blockages at the point of discharge; and, in achieving sufficient velocity of concrete in the delivery pipe, consideration had to be given to the amount of wear that would occur in the pipe. These, and other, difficulties were overcome, and pneumatic placers were put into use.

The system finally adopted is shown in the accompanying illustration. The pneumatic placer is a receiver assembly into which concrete is charged from a concrete-mixer. The concrete is then discharged by air pressure into the delivery pipe-line. The pipe-line consists of specially-designed steel piping, with wide bends and quick-release couplings. A discharge distributor, fitted at the end of the delivery pipe, is so designed that it prevents segregation of the mixture and controls the discharge of air.

The success of placing concrete mechanically depends largely upon the provision of suitable mobile shuttering. To meet this requirement, collapsible shuttering was constructed from corrugated steel to form parabolic arches.

Time, labour and materials are saved by the use of this type of shuttering, combined with the use of mechanical concrete-placing equipment. The inherent strength of an arch, compared with the old method of supporting underground workings, makes it unnecessary to use reinforced steel in the concrete walls—an important economy in the use of materials. Timber is no longer necessary to support the hanging, and the elimination of this material represents a saving, not only in the use of timber, which has a limited life, but also in the use of skilled labour formerly needed to install the timber.

Since concrete can be emplaced quickly and efficiently by the pneumatic delivery method, it now becomes economic to concrete the floors of the scraper drifts, as a result of which, in certain circumstances, ore may be moved more easily; and this, in turn, means a saving in power. Less damage is caused to finger raise brows, and repair work is thus reduced to negligible proportions.

Five pneumatic placers, each having a capacity of 6 cu. ft., are at present in operation at Nchanga. This size was chosen chiefly because the 5-7 cu. ft. concrete mixers, used for charging the placer, are compact units that can be readily transported to various positions through the workings. The normal delivery rate of each placer is about 2.5 cu. yd. of concrete an hour when served by one mixer; and a significant increase in delivery can be obtained by the use of two mixers concurrently.

In certain parts of the mine where large quantities of concrete are needed over a long period, a larger placer is desirable. For this purpose, a placer having a capacity of ½ cu. yd. is being made. The unit will incorporate a mechanical loader in order to reduce the head-room necessary for concrete to be fed from the adjacent mixer.

REVIEWS

Corrosion—Causes and Prevention, *by Frank N. Speller, D.Sc., published by McGraw-Hill Book Company, Inc., New York and London, 686 pages. Price 85s.*

Corrosion has long been regarded as a major engineering problem, but the more rapid depletion of ore supplies during the war and post-war years has underlined the importance of controlling this very costly form of waste. Though the losses from corrosion are immense, they are much less than would have been the case if, during the past thirty years or so, the subject had not been given considerable attention by leading manufacturers and research organizations. One result of all this research has been to show that the problem is far more complex than was first realized.

In the course of time the literature on corrosion has become so voluminous that it is difficult to keep abreast of it or to obtain a balanced picture of the problem as a whole. To deal comprehensively with such a vast subject in a single volume could scarcely be attempted, but there has long been a need for a simple and practical inventory of available knowledge, presented in such a form that those interested in any phase of the problem could find the basic information they required. This need has been admirably met by Dr. Speller's book, which in addition to the available information from the literature, contains data from the experience of the author and those with whom he has been associated in the study of corrosion for the past twenty years.

The book is divided into two sections. The first section is devoted to general principles and contains chapters on the nature and mechanism of corrosion, the influence of methods of manufacture and treatment, the influence of factors internal and external to the metal, and the principles and methods of corrosion testing. The second section deals with preventive measures, separate chapters being devoted to prevention of corrosion in the atmosphere, under water, under ground, in the chemical industries, etc. Each chapter is largely self-contained and ends with a brief summary of the author's own conclusions.

Reports of the Coal Mines Committee of the International Labour Organization.—*Published by the International Labour Office, Geneva.*

The following volumes have been received from the International Labour Office, Geneva, relating to the activities of the Coal Mines Committee:

Report of the First Session (London, December, 1945); Record of the Second Session (Geneva, April, 1947); General Report (Geneva, 1947); Utilization of the Resources of the Coal Mining Industry (Geneva, 1947); Record of the Third Session (Pittsburgh, April, 1949); Hours of Work in Coal Mines (Pittsburgh, April, 1949); Vocational Retraining of Disabled Miners (Pittsburgh, April, 1949); The Protection of Young Workers Employed Underground in Coal Mines (1949); and General Report (Pittsburgh, 1949). Further information may be obtained from the International Labour Office, Geneva.

Land Use and Soil Conservation on the Jos Plateau, *by A. T. Grove, M.A., F.R.C.S. Bulletin No. 22 of the Geological Survey of Nigeria. Published by authority of the Nigerian Government. Pp. 68 with appendix and illustrations. Price 10s. 6d.*

This bulletin stresses that the influence of Western civilization has changed the pattern of land use on the Jos Plateau, and that because disease and warfare no longer maintain a balance between population and cultivated area, soil erosion and deterioration are now apparent and serious. The purpose of the study reported in this bulletin was to investigate the causes of soil deterioration and to assess the geographical factors controlling conservation.

The South African Mining and Engineering Year Book.—*Published by the South African Mining Journal Syndicate Ltd. and Argus South African Newspapers Ltd., London. Issued annually. Pp. 656. Price 63s. post free.*

In this, the fortieth anniversary number of the annual under notice, full details of mines in Southern Africa are given, as well as a buyers guide and a guide to overseas manufacturers, Government departments and Public Bodies.

TECHNICAL BRIEFS

Two Types of Zinc Ore Treated in One Mill

The Peru Mining Co. of New Mexico, has developed a unique two-in-one design, in which the ore from two of the company's mines, the Pewabic and the Kearney, is handled in one mill in parallel, almost identical, circuits. The two ores require separate handling, except for crushing, unloading, and concentrate loading, because of a difference in the mineral content. The two circuits are alike except that the Pewabic half of the plant has an additional mill in the grinding circuit.

Mining World reports that the material goes by conveyor belt to a double-deck vibrating screen operating in closed circuit with a short-head cone crusher. After going through the screen, the ore drops to a conveyor belt which carries it to one of six fine ore bins. After reaching the fine ore bins, the two ores are treated by separate sections. Each grinding circuit has a classifier operating in closed circut with a ball mill. Conditioning for lead flotation takes place in the grinding circuit by the addition of 0.05 lb. of cyanide and 0.15 lb. of zinc sulphate per ton of feed, as depressants. A xanthate is added as a collector, and pine oil is introduced for frothing.

The resulting pulp is fed to the second flotation cell of the six-cell circuit and in this and the next four cells it is separated into a rougher concentrate and tailing. The rougher concentrate is passed to the first cell for cleaning. Tailing from the first cell passes to the second cell to be re-run through the rougher section. Tailing from the lead circuit it conditioned in a tank, from where it passes to the third cell in the 14-cell zinc flotation section. These cells are divided into four groups; the first two cells are for final concentrate cleaning, the next four are for roughing, followed by four for preliminary scavenging, and then four for final scavenging. Concentrate from each of these groups is returned to the next to last cell in the preceding group. Tailing flows continuously through the circuit from the first to the last cell. The final zinc concentrate is pumped to a thickener and a disc filter for final dewatering.

Flame Plating with Tungsten Carbide

Most metal parts can be protected from excessive wear, abrasion, and frictional action by plating with a thin coat of tungsten carbide. A process developed by the Linde Air Products Co., America, known as Flame-Plating, can deposit a coating of tungsten carbide to thickness from 0.0005 in. to 0.020 in. according to a report in *Journal of Metals.*

Temperature of the base metal does not exceed 400° F. during the plating operation, and there is little tendency of the part to warp. Flat surfaces, cylinders, holes, and parts with various shapes and contours can be coated satisfactorily. Surfaces up to 6 in. wide and 40 in. long can be handled, and the coated part can be used either as it is or further finished on a grinding machine. In most applications, parts Flame-Plated with tungsten carbide have shown wear resistance equal to or greater than sintered tungsten carbide and have been far superior to cast alloys, hard chromium plating, and tool steels.

Double Auger-Tuyere Improves Duplex Melting

By installing a double-auger tuyere in the cupola of a blast furnace, the iron foundry at the Ohio Malleable Iron Co. overcame several problems in its duplex melting operations. Maintenance costs were decreased and the chemistry of the metal was improved. *American Foundryman* reports that numerous difficulties were encountered with the conventional tuyere, and indicated that there was something wrong in the distribution of heat in and above the tuyere area, which included the melting zone of the cupolas. In order to locate the trouble, the foundry decided to leave conventional tuyeres in one cupola, and install a double auger-tuyere in the other for comparison. Both cupolas were subjected to normal operating cycles for 9 months.

At the end of this period, it was found that lining destruction in the cupola with the double auger tuyeres was less than that in the conventional one. Burn-out was even around the circumference of the cupola. Temperatures ranging from 2,790° to 2,840° F. were maintained constantly in the adapted cupola, while temperatures in the other varied widely from these limits. A corresponding uniformity of melting rate was experienced.

METALS, MINERALS AND ALLOYS

The sensitive condition of most of the metal markets continues. An official statement from Washington states that, as the outcome of the four days Anglo-American discussions on the mutual economic financial and political problems, the United States has given general endorsement to the "trade not aid" plan formulated at the conference of Commonwealh Ministers in London last December.

The United States Congress is now busy on hearings in regard to Bills which Congress will be asked to pass in the present session. From an industrial point of view probably the most important concerns revisions of the Taft-Hartley Act, hearings of which started on February 10 and will continue for some time to come.

COPPER.—As was depicted last week the United States situation remains extremely confused. The trade is now awaiting the announcement of the April allocations by the N.P.A. Meanwhile, sellers are committing their April metal to their favourite customers so that there may be little April copper left for other buyers under 33 c., and they may have to pay the 36½ c. At the moment the trade seems more concerned about price than supply. The N.P.A. estimates the supply of refined copper, including recovery from scrap last year, at 2,529,000 s.tons and consumption at 2,188,000 s.tons. Government stockpile acquisitions may possibly account for the difference.

Varying reports have been current regarding negotiations between U.S. refiners and Rhodesian copper producers. According to the latest information to hand Rhodesian mines are trying to negotiate the sale of 14,000 tons of blister for second quarter delivery to the U.S. refineries. One snag is that the refineries are not anxious to purchase copper now for June and July delivery, as this is a period when consuming industries shut down for the annual holiday and sufficient domestic copper should be available. It is estimated that the quantity of Rhodesian metal to be sold outside the United Kingdom in the second quarter may be around 20,000 tons, not necessarily all to the United States. Blister copper sales on the international market for the first quarter of the year are put at 10,000 tons—8,000 to the U.S.

Mr. W. Martin McCall, Solicitor General for Northern Rhodesia, acting as arbitrator in the dispute between the mining companies and the European Workers Union, began hearings on Wednesday. The Union claims that the companies are contravening the present agreement by employing independent contractors on mine property and evading their agreement by putting work out to contractors who employ Africans in jobs for which Europeans alone would be eligible were the mines themselves doing the work.

The anxiety of the Chilean Government to expand their markets outside the United States is indicated by an offer to deliver copper ore and concentrates to Western Germany in excess of the current trade agreements. The renewed strike of workers at Chuquicamata has caused a complete halt of operations. There is no further information as to the state of the coal miners' strike reported last week. A powerhouse workers' strike affecting all truck movements started at the Phelps Dodge's Laurel Hill refinery on Thursday of last week. Working plant has so far not been affected.

LEAD.—In the United States the A.S. and R. has advanced its price by ½ c. to 13½ c. per lb. reflecting active domestic demand and the improvement in the London market on Monday. The advance was quickly followed by other sellers.

Receipts by U.S. smelters of lead in concentrates and scrap last year are given by A.B.M.S. as 546,111 s.tons compared with 488,876 s.tons in 1951.

TIN.—Tin has been a very quiet and rather featureless market this week.

With the publication of the International Tin Study Group's estimate for world consumption, etc., last year and the report of the U.S. Bureau of Mines, we get a general picture of the tin situation at the end of last year. The I.T.S. Group estimates world production last year at 170,000 tons compared with 167,500 tons in 1951. The increase was due to the 4,000 ton improvement in Indonesian production at 35,003 tons. The Group estimates consumption at 127,500 tons—9,500 tons down on the year. The Bureau of Mines gives the U.S. consumption at 73,348 tons against 89,505 tons in 1951, of which primary tin accounted for only 45,299 tons compared with 56,884 tons in 1951. The Group's estimate of consumption in the U.K. is 22,554 tons (−1,338); that of France at 7,370 (−130); that of Western Germany at 7,335 (+185); that of Canada at 4,275 (−456). These various figures add up to 86,833 tons leaving 40,667 tons to be accounted for by other countries. Such an amount appears excessive but in the American compilation of stocks the Government stockpile is omitted and this may account for much of the apparent difference. Stocks held in the U.S. by the R.F.C. and industry rose by some 21,000 tons to 61,413 against 40,448. These figures emphasize how much the tin industry depends on stockpiling to maintain the balance between output and consumption. Last year a substantial tonnage was added to the national stockpile. U.S. imports of metal in 1952 increased to 80,457 tons from 28,255 in 1951—the principal importing countries were Malaya 46,891; the Netherlands 16,375; the U.K. 8,930; Belgium 7,530; and the Congo 1,275. Imports of concentrates in terms of metal totalled 26,491 tons against 29,621 in 1951. Concentrates came from Bolivia, Indonesia, Thailand and the Congo.

The Corporation Minera Boliviana is reported to have handed over the management of the Catavi, Huanuni, Japo, Morococala and Viloco mines to Sr. Victor Hamton, said to have been associated with Bolivian tin mining for the past 15 years.

It has been announced from the Hague that the mines in Billiton will continue to be worked by the Billiton Company for another five years and possibly longer, but that the Banka mines are now completely in the hands of the government. Billiton output in February is reported as 2,142 tons and for the first two months of the year 4,336 tons compared with 4,286 tons a year ago. Imports of concentrates into the Straits in February were 590 tons, of which 468 came from Thailand. Total Malayan stocks at end January were 6,280 tons (6,757 in December).

Production of the Longhorn smelter last year fell to 22,541 tons compared with 30,883 tons. After the three months' closure in the middle of the year, production figures were high and this continued during last January and February, when 7,400 tons were reported.

ZINC.—Despite a further cut in the United States price of zinc to 11 c. suggesting a further probable reduction in output, the metal failed to reflect the animation displayed by lead. Despite the short month, stocks increased in February by some 5,000 s.tons to 93,664 tons, and unfilled orders continued to decline, at 37,172 s.tons. Production for the month was 76,899 tons of which 20,885 were special high grade, 15,535 high grade, intermediate 1,471 and prime western 38,950. Shipments including exports and drawback totalled 71,710 s.tons against 80,679 tons in January. Mine production of recoverable zinc in the United States last year was down at 661,023 s.tons against 681,189.

ALUMINIUM.—Aluminium production by the leading producing countries last year is reported as follows: U.S. 837,000 s.tons; Canada 450,000 s.tons; U.S.S.R. 300,000 s.tons (an estimated figure); France 106,100 tonnes.

ANTIMONY.—Production of antimony in the U.S. last year is reported by the Bureau of Mines at 11,965 s.tons against 12,228 s.tons in 1951. Imports were also lower at 12,855 (15,731 s.tons in 1951), as was also consumption at 14,075 compared with 17,519 s.tons in 1951.

COBALT.—The U.S. Bureau of Mines reports a great improvement in the cobalt supply position during last year resulting from substantial increase in output and larger recoveries from scrap. Free World production is computed at around 10,000 tonnes (+1,500). The Congo principal producer turned out between 6,500 and 7,000 tonnes and there has been an extensive increase in refineries. The Jadotville plant was enlarged and the production of electrolytic cobalt begun at Kristiansand, by the Falconbridge Nickel Mines. The Rhokana's electrolytic plant began operation in the middle of 1952, and

the Calera company's plant at Garfield was completed but did not come into production until the beginning of the current year. U.S. consumption increased by about 9 per cent to 10,786,713 lb. Imports were a record and increased by 46 per cent over 1951, itself a record year. With a total of 12,019,687 lb. of metal and 1,386,935 lb. of oxide, 6,116,401 lb. of white alloy, 215,572 lb. of ore, and 12,759 lb. of salts and compounds. Domestic production of cobalt metal was equivalent to 2,028,964 lb. of cobalt, and of oxide 539,467 lb. of contained cobalt.

TUNGSTEN.—The uncertainty regarding the price remains unchanged and there is nothing really objective to note. With the U.K. and the U.S. governments retired from the market, no realistic prices are obtainable, but quotations are called 310/320 shillings for wolfram and 300/310 for scheelite. The Portuguese Ministry of Economy has refused to reduce the export tax despite the rapid fall in prices and it is thought that this may lead to closing down of the smaller mining concerns. A somewhat similar position is said to exist in Spain. Portuguese exports last year are reported as 4,495 tonnes compared with 4,223 in the previous year. Last year the United States became the chief importer with 2,112 tonnes while Great Britain totalled 1,654 tonnes; France took 369 tonnes, and Germany 196 tonnes.

Iron and Steel

The annual rate of steel production which reached a record figure of 18,000,000 tons in January was further increased last month to a level of 18,325,000 tons, and the industry is now confidently expected to achieve its target of 17,500,000 ingot tions in 1953. There is invariably a shrinkage of output during the holiday months, but somewhere about mid-summer the new Dorman Long steel plant with a capacity of 500,000 tons is due to come into operation and later in the year other new plant will be available.

These developments bring into the immediate foreground the prospect of a speedy termination, or at least the modification, of the allocation scheme which was reintroduced a little more than a year ago. At the time the necessity for some form of controlled distribution was universally accepted. But circumstances have since undergone a radical change. The current supply of steel is rapidly overtaking the demand and is expected to be in balance by the end of June at the latest. Certain types of steel such as plates and sheets are still scarce, and may require special consideration but it is felt that the industry as a whole would benefit by liberation from the rigidities of the rationing system.

There is of course no question of any release from the official control of iron and steel prices which has been exercised by the Ministry of Supply for over 20 years. But a decision on the subject of the industry's application for a higher level of prices is becoming a matter of urgency. Following last week's ten per cent rise in coal prices, quotations for blast furnace coke have been advanced by 6s. 9d. to 8s. per ton and the increase in foundry coke prices ranges from 9s. 2d. to 10s. 6d. per ton. Such formidable additions to iron and steel makers' costs of production cannot be absorbed by the industry and the prompt revision of prices is called for.

To the extent of 400 tons a week there was a slight shrinkage of pig iron production last month, but the annual rate is nearly a million tons better than it was a year ago and the March figures will be even better as another new blast furnace has come into production. Generally the supply of pig iron has overtaken immediate requirements although haematite is scarce, and the improvement in the arrivals of home and foreign scrap is maintained.

The London Metal Market

In the U.S. the copper situation is still one of shortage for nearby metal of all origins and of shortage of domestic metal for several months to come, as buyers are naturally trying to purchase as much of their allocation as possible at the lower price levels. There has been no information that the overall allocation system is to be discontinued, although the necessity for purchasing a percentage in domestic copper has been rescinded. On the Continent trade is quiet and prices remain virtually unchanged.

The tin market calls for no comment except that the reduction in stocks in the U.K. will help to maintain the present backwardation. The Eastern price on Thursday morning was equivalent to £961 per ton c.i.f. Europe.

Trading in lead has been very much better, and the U.S. producers seized the opportunity of the firmness in London to raise their price on Tuesday by ½ c. per lb. Demand in America is good, but elsewhere consumers are still buying from hand to mouth as they feel the rise in the Metal Exchange quotation is due more to technical factors than to their own activities, and it is true that the tight position in March has contributed to the apparent strength of the market. Unless consumers show more interest the somewhat freer position which developed during the middle of the week should tend both to decrease the backwardation and to lower the general price level.

The zinc price has followed that of lead, but here the technical factors do not exist, and with consumption running at a low rate a further recession appears inevitable now that the technical upswing has taken place.

Closing prices and turnovers for the week are given in the following table.

	March 5		*March 12*	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Tin				
Cash	£956	£958	£955	£956
Three months	£940	£942	£943	£944
Settlement	£957		£956	
Week's turnover	210 tons		280 tons	
Lead				
Current month	£88½	£88¾	£89	£89¼
Three months	£87	£87¼	£86¾	£87
Week's turnover	4,125 tons		6,125 tons	
Zinc				
Current month	£77½	£77¾	£78	£78¼
Three months	£77¾	£78	£78¼	£78½
Week's turnover	5,475 tons		4,800 tons	

MARCH 12 PRICES

COPPER

Electrolytic .. .. £285 0 0 d/d

TIN, LEAD AND ZINC

(See our London Metal Exchange report for Thursday's prices)

ANTIMONY

English (99%) delivered, 10 cwt. and over .. .. £225 per ton
Crude (70%) .. .. .. £210 per ton
Ore (60% basis) .. .. .. 20s. — 22s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) .. .. £483 per ton

OTHER METALS

Aluminium, £166 per ton
Bismuth (min. 5 cwt. lots) 17s. 6d. lb.
Cadmium (Empire), 14s. 4d. lb.
Chromium, 6s. 5d./7s. 6d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.oz.
Iridium, £60 oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96%-98%) £280/£295
Osmiridium, £40 oz. nom.
Osmium, £65/£70 oz. nom.
Palladium, £7 15s./£8 10s. oz.
Platinum, £27/£33 5s.
Rhodium, £42 10s. oz.
Ruthenium, £25 oz.
Quicksilver, £70 10s./£71 ex-warehouse
Selenium, 30s. 6d. nom. per lb.
Silver 74d. f.oz. spot and f'd.
Tellurium, 18s./19s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 30% 6s. 3d. lb. c.i.f.
20% 4s. 6d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £13 2s. per ton c.i.f.
" " (concentrates) £13 2s. per ton c.i.f.
" " Refractory £12 14s. per ton c.i.f.
Baluchistan Metallurgical .. £14 15s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26 - £27 d/d
Magnesite, Raw .. .. .. £10 - £11 d/d
Molybdenite (85% basis) .. .. 103s. 10½d. per unit c.i.f.
Wolfram (65%) .. .. .. World buying 315s.
" " .. .. .. 352s. 6d. Selling
Scheelite .. .. World buying 305s.
" .. .. 342s. 6d. Selling
Tungsten Metal Powder (for steel manufacture) .. .. 30s. 8d. nom. per lb. (home)
Ferro-tungsten .. .. .. 25/3-25/9 nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £35 13s. 9d. d/d per ton
Ferro-manganese, home .. .. £48 12s. 11d. per ton
Manganese Ore U.K. (48% - 50%) .. .. .. 6s. 1d. per unit
Brass Wire .. .. 2s. 7½d. per lb. basis
Brass Tubes, solid drawn .. 2s. 1½d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Stock markets up to Monday were bright and on that day a record number of 10,782 bargains were marked—the best day's turnover for over a year. The especially large settlement for the 3-week account, quietened business down on Tuesday, and later prices boiled over. Gilt-edged were firm despite rumours that a new Ulster loan may be issued shortly and obvious evidence that Russia under new leadership was once again on the war-path for peace. Revenue returns confounded all prophets of woe, including your correspondent. A substantial surplus was achieved against all precedent for this time of year.

Kaffirs started the week with sharp selective buying, particularly of Strathmore. This was based on the prospects of the Hartebeestefontein flotation and the general uranium possibilities of all the mines in the Klerksdorp area. New Pioneers also went ahead and H.E. Proprietary were one of the few finance houses to record any substantial advance. Among individual mines, Western Reefs and Van Dyk rose, the latter on fresh rumours of good developments from No. 5 shaft. Some speculative buying of Springs occurred on unconfirmed uranium rumours. Interest was displayed on East Rand Extensions; they have a 30 per cent interest in the Ellaton mine where, it is believed, underground development is being pushed ahead rapidly. Readers will recall that this is a shallow mine; the shaft interesected the reef at 770 ft. It is thought that the grade may prove as high as 10 dwt.

Slackening interest and profit-taking in Kaffirs was not reflected in the O.F.S. mines which went ahead smartly. Cape buyers came in for Geoffries, and Middle Wits were a feature due to a combination of borehole rumours and the company's connection with the new flotation on the Far West Rand.

The big feature in the copper market was the granting of Treasury permission to the Roan and R.S.T. groups to emigrate to Rhodesia. Application to do this was lodged nearly a year ago. The shares of the two companies and those of Selection Trust went ahead, but brisk buying was not sustained and they closed below the best. It is reported that the Rhodesian companies are endeavouring to sell as much as 14,000 tons of copper to the United States. This is more than had been originally anticipated and underlines the generally easier commodity situation. Some speculative buying of Messina was reported in front of the meeting.

Beralts closed better but the overall tungsten position is confusing. There seems little doubt that a free market in the metal to-day would mean a considerably lower price, but this in turn might cause many high cost producers to close down.

British Tin Investment jumped on hopes that some special notice would be taken of the company's position in the coming budget. The main feature of interest in this market is still columbite. Both the press and market are attempting to calculate possible outputs and profits for mines in this section. Provided that the American price is held and output can be increased as planned, some excellent profits should be seen during the coming year. The sharp rise in Jos Tin was caused by the publicity given to the liquid assets and investments of the company, which amount to £323,260 against a nominal capital of £89,300. The company's output of columbite is small.

Canadians eased off. Sterling has recently been harder vis-a-vis the Canadian dollar and the British and American talks towards the convertibility of the pound have caused a reduction in the premiums of many dollar shares.

FINANCE	Price Mar. 11	+ or — on week
African & European	2½	.....
Anglo American Corpn.	6⅛	—⅛
Anglo-French	19/6XD	—6d
Anglo Transvaal Consol.	28/3	+9d
Central Mining (£1 shrs.)	35/-	—1/3
Consolidated Goldfields	53/-	.....
Consol. Mines Selection	30/-	—1/3
East Rand Consols	3/10½	+6d
General Mining	5	.....
H.E. Prop.	45/7½	+1/10½
Henderson's Transvaal	8/9	+3d
Johnnies	66/10½	—7½d
Rand Mines	4⅛	—⅛
Rand Selection	37/6	.....
Strathmore Consol.	44/4½	+8/10½
Union Corp. (2/6 units)	31/6	—1/-
Vereeniging Estates	4 1/16	+1/16
Writs	34/9	—3d
West Wits	47/6	.....
RAND GOLD		
Blyvoors	44/-	—3d
Brakpan	13/-	.....
City Deep	26/3	—2/6
Consol. Main Reef	32/6	—1/3
Crown	40/-	—7½d
Daggas	3⅜	.....
Doornfontein	27/-	—6d
Durban Deep	2 1/16	—⅛
E. Daggas	20/-	—1/3
E. Geduld .. (4/- units)	37/6	—1/3
E. Rand Props	3 3/8	—⅛
Geduld	5	—¼
Govt. Areas	15/-	.....
Grootvlei	27/9	—1/6
Libanon	11/-	.....
Luipaards Vlei	28/9	—3d
Marievale	22/6	—9d
Modderfontein East	20/-	.....
New Kleinfontein	25/7½	—7½d
New Pioneer	24/3	+3/3
Randfontein	43/9	—3d
Robinson Deep	10/9	—6d
Rose Deep	18/9	—7½d
Simmer & Jack	5/9	—1½d
S.A. Lands	30/-	—1/3
Springs	7/4½	+6d
Stilfontein	28/3	.....
Sub Nigel	53/9	—7½d
Van Dyk	10/6	+1/3
Venterspost	16/9	—6d
Vlakfontein	16/9	—3d
Vogelstruisbult	33/3	—6d
West Driefontein	6¾	—¼
W. Rand Consolidated	56/10½	—1/10½
Western Reefs	48/9	+7½d

O.F.S.	Price Mar. 11	+ or — on week
Freddies	15/10½	+1/4½
Freddies N.	15/10½	+4½d
Freddies S.	15/10½	+4½d
F. S. Geduld	2 3/16	.....
Geoffries	20/6	+2/9
Harmony	26/6	+1/-
Loraine	10/9	+1/3
Lydenburg Estates	13/6	+3d
Merriespruit	6/9	+3d
Middle Wits	19/6	+2/6
Ofsits	43/1½	—7½d
President Brand	23/9	+6d
President Steyn	22/-	+6d
St. Helena	15/-	—4½d
U.F.S.C. & G.	10/9	+4½d
Virginia Ord.	14/1½	+7½d
Welkom	25/-	—6d
Western Holdings	3 3/16	+⅛
WEST AFRICAN GOLD		
Amalgamated Banket	1/10½	.....
Ariston	6/9XD	+1½d
Ashanti	23/3XD	—6d
Bibiani	6/9XD	+3d
Bremang	2/4½	.....
G.C. Main Reef	3/9	.....
G.C. Selection Trust	7/3	.....
Konongo	2/9	.....
Lyndhurst Deep	1/1½	.....
Marlu	1/3	+1½d
Taquah & Abosso	4/-	—1½d
AUSTRALIAN GOLD		
Boulder Perseverance	2/3	.....
Gold Mines of Kalgoorlie	11/4½	+7½d
Great Boulder Prop.	7/3	+3d
Lake View and Star	16/-	—3d
Mount Morgan	18/9	—4½d
North Kalgurli	12/3	+3d
Sons of Gwalia	6/9XD	—9d
South Kalgurli	7/1½	.....
Western Mining	11/4½	+4½d
MISCELLANEOUS GOLD		
Cam and Motor	9/7½	.....
Champion Reef	5/7½	—1½d
Falcon Mines	7/6	—6d
Globe & Phoenix	25/9	.....
G.F. Rhodesian	6/4½	.....
London & Rhodesian	4/9	.....
Motapa	1/10½	.....
Mysore	3/4½	+4½d
Nundydroog	6/3	.....
Ooregum	3/4½	.....
Oroville	11/-XD	—6d

MISCELLANEOUS GOLD (contd.)	Price Mar. 11	+ or — on week
St. John d'El Rey	26/6	—9d
Zams	30/-	.....
DIAMONDS & PLATINUM		
Anglo American Inv.	4⅛	+⅛
Casts	24/6	—6d
Cons. Diam. of S.W.A.	4½	+⅛
De Beers Defd. Bearer	70/9	—1/3
De Beers Pfd. Bearer	14⅜	+½
Pots Platinum	8/9	—9d
Waterval	15/6XD	—6d
COPPER		
Chartered	53/-XD	—3d
Esperanza	4/1½	—1½d
Indian Copper	4/7½	.....
Messina	3¼	+⅛
Nchanga	6 1/16	—⅛
Rhod. Anglo-American	50/6	—6d
Rhod. Katanga	12/1½	—1/1½
Rhodesian Selection	17/6	+1/7½
Rhokana	18⅜	+⅛
Rio Tinto	24	.....
Roan Antelope	14/7½	+1/6
Selection Trust	39/-	+2/1½
Tanks	60/-	—2/3
Tharsis Sulphur Br.	41/3	.....
TIN (Eastern)		
Ayer Hitam	27/1½	—1½d
Bangrin	7/9	.....
Gopeng	11/-XD	+6d
Hongkong	9/6	.....
Ipoh	18/6	—6d
Kamunting	11/-	—1½d
Kepong Dredging	6/9	—3d
Kinta Tin Mines	13/9	—3d
Malayan Dredging	27/3	+1/3
Pahang	16/7½	+4½d
Pengkalen	8/6	—10½d
Petaling	13/3	—3d
Rambutan	13/3	+3d
Siamese Tin	23/-	—3d
Southern Kinta	16/3XD	.....
S. Malayan	28/-	+1/-
S. Tronoh	12/9	+6d
Sungei Kinta	18/-	.....
Tekka Taiping	7/7½	—4½d
Tronoh	26/-	+6d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	11/9XD	+1½d
Beralt Tin	27/1½	+9d
Bisichi	4/10½	.....
British Tin Inv.	16/-XD	+1/4½
Ex-Lands Nigeria	4/7½	.....

TIN (Nigerian and Miscellaneous contd.)	Price Mar. 11	+ or — on week
Geevor Tin	14/3	—3d
Gold & Base Metal	4/6	+7½d
Jantar Nigeria	14/9	+4½d
Jos Tin Area	13/-	+2/-
Kaduna Prospectors	3/3XD	+1½d
Kaduna Syndicate	3/6XD	+1½d
London Tin	5/6	—1½d
United Tin	3/3	—1½d
SILVER, LEAD, ZINC		
Broken Hill South	44/4½	—7½d
Burma Mines	1/10½	.....
Consol. Zinc	27/3	—6d
Lake George	13/9	.....
Mount Isa	37/6	—1/9
New Broken Hill	19/9	+3d
North Broken Hill	56/3	—7½d
Rhodesian Broken Hill	13/1½	—7½d
San Francisco Mines	28/6	+6d
Uruwira	4/-	+1½d
MISCELLANEOUS BASE METALS & COAL		
Amal. Collieries of S.A.	46/-	.....
Associated Manganese	50/-	—3/6
Cape Asbestos	20/9	—1½d
C.P. Manganese	56/10½	+1/3
Consol. Murchison	32/6	+1/6
Mashaba	8d	.....
Natal Navigation	3 3/16	+⅛
Rhod. Monteleo	11/-	—6d
Turner & Newall	106/-	—3d
Wankie	15/-	—3d
Witbank Colliery	3 3/16XD	—⅛
CANADIAN MINES		
Dome	$39½	.....
Hollinger	$29	—½
Hudson Bay Mining	$104	—1
International Nickel	$78	—1
Mining Corpn. of Canada	£4 7/16	—⅛
Noranda	$140	—2
Quemont	£6 7/16	.....
Yukon	4/7½	—1½d
OIL		
Anglo-Iranian	5 5/16	.....
Apex	42/6	.....
Attock	26/3	+7½d
Burmah	44/4½	+7½d
Canadian Eagle	34/9	+1/3
Mexican Eagle	20/6	.....
Shell (bearer)	83/1½	+7½d
Trinidad Leasehold	28/3	+1/6
T.P.D.	24/4½	.....
Ultramar	24/-	.....

COMPANY NEWS AND VIEWS

RST Group Receive Treasury Consent To Emigrate

Rhodesian Selection Trust Group announced at the end of last week that consent had been given by H.M. Treasury for permission to transfer residence to Northern Rhodesia. The companies concerned were Roan Antelope Copper Mines, Rhodesian Selection Trust, Mufulira Copper Mines, Chibuluma Mines and Rhodesian Selection Trust (Services). The announcement also stated that notices would in due course be posted to shareholders calling extraordinary meetings, at which would be submitted special resolutions to alter the companies' articles of association.

When it was first announced on May 24, 1952, that these companies had applied to H.M. Treasury for permission to transfer their residence to Northern Rhodesia it was then stated that their action had been prompted by "the emergence in that territory of political and industrial conditions calling for the direction of the policy of the companies from within the territory."

In the absence of any official statement from H.M. Treasury giving the reasons for their consent to this application it is impossible to say whether this represents the first real breach in the "ring fence," or whether it is the successful outcome of continual political pressure exerted from Northern Rhodesia to bring its chief revenue producing industry under local control.

There is, of course, always the possibility that the Treasury's approval is an indication of what can be expected when Mr. Butler outlines the new Finance Act next month. If so, while freedom to emigrate would be welcomed by shareholders, by the markets and by all those who mind about British ideas of justice, this is, indeed, the narrow view. For if such freedom is contemplated unaccompanied by major changes in the present taxation system which would, at the very least, bring this country into line with the more enlightened tax treatment dispensed by governments of other countries in respect of their overseas mining industries, no progress will have been made. The stigma now attaching to the present regulations which virtually prohibit the emigration of companies, will have disappeared. But, in its place, will be the justifiable accusation that official thinking on this question has failed miserably to comprehend the importance to this country, strategically and financially, of a prosperous British overseas mining industry.

On the other hand, there is a good deal to be said for the view that the time has passed when such large and vital enterprises can be controlled from a centre thousands of miles distant from the scene of the day-to-day operations. This point is particularly germane to the R.S.T. group, the effective labour force of which has now been welded into an articulate African trade-union body whose voice was recognized not so long ago when their demands for wage increases were granted. But that an African employees' strike, however peacefully conducted, did take place was perhaps indicative of the need for closer contact with local affairs to be made and maintained at all levels of management. Should Central African Federation become a reality the case for absolute control of the group's affairs at the scene of operations would become irrefutable.

If this is the argument which has led to H.M. Treasury's consent being granted more is the pity that the situation was not rightly assessed and acted upon nine months or so ago. In that case, at least the British overseas mining industry would have had the satisfaction of knowing that those in Westminster were capable of recognizing a situation which went far beyond the mere question of counting up the annual contributions in tax to the United Kingdom exchequer.

Rhodesian Corporation Looks Ahead

The full report and accounts of Rhodesian Corporation for the year ended September 30, 1952, show a total income figure of £102,816 compared with £84,583 for the preceding 14 months period.

The chief item contributing to this total came from dividends and interests received amounting to £25,494 (£19,364). This is as interesting as it is important for the Corporation is a mining finance house and this item will, in the last analysis, be used as the yardstick to measure its success. There should not be any worries on this account as the Corporation's two chief assets, Falcon Mines and Rhodesian Brick and Potteries, have really only begun to get into their full stride.

To date both these interests have required that profits be ploughed back; Falcon Mines to bring its Dalny Mine into full production; and Rhodesian Brick and Potteries to complete its new works at Salisbury which will be additional to the main works at Bulawayo.

The present situation is that although the Dalny Mine is crushing to its full capacity of 12,000 tons per month it is deprived from receiving the full benefits from its milling programme until its roasting unit has been installed. The unit is, however, on order and is expected to be in commission before the end of this year. The Salisbury works of Rhodesian Brick and Pottery have been completed and production in the first tunnel kiln commenced in January last.

The third main source of the Corporation's revenue is its agricultural and real estate interests. During the year under review, net revenue from farms and estates totalled £22,585 compared with a loss in the preceding year of £4,597.

As previously announced in our issue of February 27, Rhodesian Corporation's net profit for the year went ahead from £42,546 to £67,672 enabling the company to come into the lists of dividend payers for the first time since 1935/6, with the payment of 7½ per cent. This required £38,500 and after allocating £15,000 (£10,741) to investment depreciation reserve, the carry forward at the financial year-end was £43,556 compared with £32,709 brought in.

The Corporation has also declared an interim dividend of 2½ per cent in respect of the current year ended September 30, 1953. Meeting, London, April 24.

Blackwood Hodge To Obtain Share Quotation

John Blackwood Hodge and Co., the well-known distributors of earth moving machinery in this country and in certain overseas territories for the Euclid Road Machinery Company, Ohio, its subsidiary, Euclid (Great Britain), the Marion Power Shovel Company, Ohio, and the Cummins Diesel Export Corporation of Indiana, has made arrangements which will obtain for it a stock exchange quotation.

Briefly this is being achieved by John Blackwood Hodge and Co. acquiring virtual control of Lenora Corporation, which is a quoted security, and then changing the name from Lenora to Blackwood Hodge (Holdings).

In detail an agreement has been entered into by which the Lenora Corporation will acquire all the Blackwood Hodge capital for a consideration in Lenora shares of £300,000 in 6 per cent £1 cumulative preference shares and £514,999 16s. 6d. in ordinary shares. Currently, Lenora has £85,000 3s. 6d. in 6d. shares issued so that it will have an issued capital of £300,000 in preference shares and £600,000 in ordinary shares. The ordinary shares will be consolidated into 5s. denominations and the name of Lenora changed to Blackwood Hodge (Holdings).

The agreement is conditional on acceptance by Lenora shareholders of resolutions to be submitted at an extraordinary meeting convened for April 1 and the granting of a quotation for the shares.

Anglo Canadian Corporation To Develop Newfoundland

The negotiations which have been taking place between the Newfoundland Government and a syndicate of British and Canadian companies for the development and exploitation of Newfoundland's natural resources have now been completed. The purpose and the scope of these negotiations were given in our issues of December 12, 1952, and February 27, last.

The Syndicate is forming a new Corporation to be incorporated in Newfoundland, which will be known as the British Newfoundland Corporation Limited, the objects of which will be to explore and exploit certain selected areas in Newfoundland and Labrador. The Corporation's offices will be in St. John's.

The authorized capital of the Corporation will be 10,000,000 shares of no par value and funds will be provided to permit the Corporation to carry out the first stages of its undertaking to

the Newfoundland Government, namely the expenditure on exploration and examination of the natural resources of the Province of a minimum of Can.$1,250,000 during a five-year period.

Second, third and fourth five-year exploratory periods are contemplated involving the expenditure of similar minimum amounts.

The Syndicate, to which there may be additions, at present comprises: N. M. Rothschild and Sons; The Bowater Paper Corporation Ltd.; Anglo-Newfoundland Development Co. Ltd.; Anglo American Corporation of South Africa Ltd.; Rio Tinto Co. Ltd.; Frobisher Ltd.; The English Electric Co. Ltd.; Morgan Grenfell and Co. Ltd.; J. Henry Schroder and Co.; Hambros Bank Ltd.; Robert Benson, Lonsdale and Co. Ltd.; Kleinwort, Sons and Co. Ltd.; M. Samuel and Co. Ltd.; Alliance Assurance Co. Ltd.; The Prudential Assurance Co. Ltd.; C. T. Bowring and Co. Ltd.; The British Metal Corporation Ltd.; Imperial Chemical Industries Ltd.; The British South Africa Company; Sogemines Ltd.

Mr. B .C. Gardner has accepted the invitation of the Corporation to become its first President and Mr. H. M. S. Lewin to become the first Vice-President—additional Canadian directors will be announced later. The London directors of the Corporation are Viscount Rothermere, Sir Eric V. Bowater, Mr. J. N. V. Duncan, and Mr. R. W. C. Hobbs.

Consolidated Goldfields New Share Issue

The Consolidated Gold Fields of South Africa has announced that underwriting has been completed for an issue of £300,000 new £1 ordinary shares at 48s. per share. The new shares will rank *pari passu* with the existing ordinary shares and holders of the new shares will be entitled to participate in any dividend declared on the ordinary share capital in respect of the year ending June 30, 1953.

The new shares will be offered on March 13 to existing ordinary share holders at the close of business on March 6 for payment in full on application on or before March 27.

JOHN SUMMERS & SONS LIMITED

HEAVY CAPITAL EXPENDITURE PROGRAMME

The Annual General Meeting of John Summers and Sons, Limited, was held on March 6, at Chester.

Mr. Richard F. Summers, chairman of the company, presided.

The following is the report of the directors:—

The directors have pleasure in submitting their annual report together with the audited accounts of the company for the 52 weeks ended September 27, 1952.

PRESENTATION OF ACCOUNTS

The method of presentation of the accounts is exactly similar to that adopted last year, but as the accounts at that time covered a period of 39 weeks only, resulting from the change in the company's financial year end, the comparative figures shown in the profit and loss account are for this shorter period.

DEVELOPMENT SCHEME

Progress on the scheme for complete integration of the Shotton Works, involving the erection of coke ovens, blast furnaces and new steelworks, continued during the period, expenditure amounting to £5,773,029, giving a total expenditure to September 27, 1952, of £13,742,634. Certain sections of the plant came into operation in the middle of August and the expenditure thereon, £7,094,197, has been transferred to the main heading of fixed assets—land, property, fixed plant and machinery, houses and cottages. Although this plant did not contribute in any material way to the profits of the period, depreciation has been provided for the six weeks the plant was in operation.

Further units are now in operation and it is hoped that during the next few months all the plant included in the first stage of the scheme will be completed and in full-scale production.

A second stage, covering the installation of further coke ovens and a second blast furnace, has been approved by all the appropriate authorities during the past year and construction, which has already started, will continue without interruption after the completion of the first stage.

The expenditure on these schemes has from their inception been under the strict supervision of the directors, and although rising prices have increased the costs over the original estimate your directors are satisfied that the extensions will be completed at reasonable costs for present-day conditions.

They are also satisfied that after the initial running-in period the production from this new plant will give a supply of high quality steel which will enable the production of the strip mill to be greatly increased and thereby assure the company's position in the industry and place it in a highly competitive position both at home and in the overseas markets.

SURPLUS ON ASSETS VESTED IN THE NATIONAL COAL BOARD

Further sums, totalling £274,426, were received during the period in respect of the colliery assets of certain of the subsidiary companies. The final amount of compensation to be received has not yet been determined, but a further substantial payment has been received since the end of September and it is confidently expected that the final surplus on the book value of the assets taken over on January 1, 1947, will exceed £500,000.

DEBENTURE STOCK

This issue of Debenture stock has not been affected by the Iron and Steel Act, 1949, and is still held by the general investing public. During the past year the company has been buying any amounts of stock offered on the Stock Exchange and will meet the first operation of the sinking fund in June, 1953, by the surrender of the appropraite amount of such stock.

PROFIT AND LOSS ACCOUNT

Shortage of raw materials was a limiting factor on the production of all the major units of plant, but close supervision of operating costs maintained profit margins and satisfactory prices were obtained for the limited tonnage which was permitted to be sold in the export market. Trading profits were once more augmented by the revelation of stocks resulting from an increase in steel prices during the year, and in accordance with the practice which has been adopted in past years it is proposed to transfer to stock reserve the approximate net amount after taxation of such windfall profit.

The amount of income tax and profits tax saved up by initial allowances on capital expenditure up to the withdrawal of such allowances on April 6, 1952, has again been transferred to the special reserve for deferred taxation.

Provisional computations which have been prepared show that there is no liability on the company for excess profits levy.

The net profit of the period available for appropriation by the parent company amounts to £1,335,045, compared with £886,938 for the 39 weeks of 1951. Out of this profit provision has been made for payment of the dividend on the 4½ per cent Cumulative Preference stock for the year and for the payment of a final dividend of 5½ per cent on the Ordinary Stock, which, together with the interim dividend of 3 per cent paid during the year, makes a total dividend for the year of 8½ per cent.

The directors recommend transfers of £800,000 to general reserve, £25,000 to contingencies reserve, and £150,000 to stock reserve leaving the carry forward in the parent company's account at exactly the same figure as that of the previous year.

The report and accounts were unanimously adopted and the dividends as recommended were approved.

The retiring directors, Sir Geoffrey Summers, Bt., C.B.E., D.L., Mr. Neville H. Rollason, Mr. L. C. Salter and Mr. Kenneth Younghusband, were re-elected, and the remuneration of the auditors, Messrs. Deloitte, Plender, Griffiths & Co., having been fixed, the proceedings terminated.

MINING ENGINEERS required for British Guiana. Age 25/40, must be single. University Degree and five years minimum experience open pit mining. Required to assist in supervision of operations using power shovels, draglines, bulldozers and tractor scrapers. Write full particulars, training and experience, to Box 531, The Mining Journal, 15 Wilson Street, Moorgate, London, E.C.2.

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THE CONSOLIDATED MINES SELECTION CO., LTD.

ABRIDGED REPORT OF THE DIRECTORS FOR THE YEAR ENDED 31st DECEMBER, 1952

FORMATION OF SUBSIDIARY SHAREDEALING COMPANY

The Consolidated Mines (Investments) Limited was incorporated as a Private Company on the 19th December, 1952, with an authorised capital of £10,000 shares of £1 each. The whole of the authorised capital was then issued and is held beneficially by this Company.

Its function will be to act as a subsidiary sharedealing Company mainly concerned with handling share transactions of a relatively short-term character. Its purpose is to overcome the disadvantages, hitherto felt, of having at a year-end to average for tax purposes shares purchased during the year with stock previously held, and standing in the Company's books at much below current market prices. These difficulties have hampered sharedealing, and the operations of the new Company will allow greater freedom of action.

ACCOUNTS

	1952 £	1951 £
PROFIT—		
Profit after charging all expenses but before providing for taxation was	252,765	281,920
Deduct : Taxation—United Kingdom and South Africa	102,866	131,083
	149,899	150,837
Add : Unappropriated Profits brought forward ..	34,293	36,581
Making a total available for appropriation of	184,192	187,418
APPROPRIATIONS—		
Deduct : Amount transferred to General Reserve ..	21,935	25,000
	162,257	162,418
Deduct : Proposed Dividend of 1s. 6d. per stock unit, and bonus of 1s. 0d. per stock unit, less Income Tax, and Directors' Additional Remuneration	128,125	128,125
Leaving Unappropriated Profits to be carried forward	£34,132	£34,293

The profit for the year, subject to Taxation, shows a reduction of £29,155 as compared with the previous year's figure which was arrived at after writing off £32,612 for depreciation of investments. Share values continued to decline gradually throughout the year and whilst, in accordance with past practice, quoted investments are shown for Balance Sheet purposes at the lower of cost or market value, the writing down of book values to that basis required £85,454. Certain other investments had, however, appreciated by £13,519 of the amounts written off in past years. The net depreciation to be met at the date of the Balance Sheet was, therefore, £71,935 and General Reserve has been drawn on to that extent. At the date of this Report, the market values of the shares written-down had so improved as to largely offset this depreciation. The Consolidated Balance Sheet shows that Quoted Investments as a whole had a market value of £2,718,355 as against their book valuation of £1,542,329, giving an overall appreciation at the 31st December, 1952, of £1,176,026.

The effect of the present Excess Profits Levy added to other taxation on the year's profits is that of all additional profit earned over the Company's comparatively modest standard profit for Excess Profits Levy purposes, 80 per cent. has to be paid away in taxation.

The Profit and Loss Account shows that income from dividends and interest was well maintained at £253,549, an increase of some £4,000 over the 1951 revenue for this item. The year under review was, apart from the penal effects of the Excess Profits Levy, singularly unpropitious for sharedealing. Revenue from underwriting continued at a satisfactory level, but net receipts under the heading realisations, underwriting commissions and interest received showed a major decline. Variations in the amount of income the Company draws from these various sources must be expected from year to year.

After allowing for the dividend and bonus recommended by your Directors, the Consolidated Balance Sheet shows a surplus of current assets over current liabilities and provisions of £73,298 but account must be taken of contingent liabilities of some £64,000. The latter figure, however, compares with £297,000 for the 1951 Accounts which included an underwriting commitment relative to £200,000 5 per cent. Registered Unsecured Convertible Notes of President Steyn Gold Mining Company, Limited. The discharge of that contingency resulted in a profit.

The Fifty-seventh Annual General Meeting of Members will be held at The Chartered Insurance Institute (Conference Hall, Ground Floor), 20, Aldermanbury, London, E.C.2, on the 31st March, 1953, at 12.30 p.m. Copies of the full Report and Accounts may be obtained on application to the Company's office, 11, Old Jewry, E.C.2.

THE MERCANTILE BANK OF INDIA

The 60th annual general meeting of The Mercantile Bank of India, Ltd., will be held on March 31 in London.

The following are extracts from the statement of the Chairman, **Sir Kenneth W. Mealing**:—

The accounts indicate that there has been no falling off in the volume of business handled by the Bank and despite the recession in world prices of most commodities the balance sheet total at £74 million shows little change. On the assets side, there is an increase of £6½ million in our holding of Government Securities, but this has been counter-balanced by a fall of £4½ million in bills receivable and a decrease of £2 million in loans and advances. On the other side, the increase in deposits of £1 million has been offset by a decrease of £1 million in bills payable.

At £195,188 our net profit is very slightly lower than in the previous year, provision having had to be made for increased taxation in the form of E.P.L. Considering the difficulties we had to anticipate during a period of trade recession and anti-inflation I trust you will agree that the results of the year's working are satisfactory. The directors have felt justified in recommending a final dividend of 8 per cent and if this recommendation is approved the dividend for the year will be 14 per cent, a figure which the directors consider is justified by the progress of the Bank.

To my deep regret I am unable to report any appreciable improvement in international affairs during the past year. The hope of an armistice in Korea appears to have faded almost completely and there is no sign of any relaxation in the cold war maintained by the Russian dominated bloc against the Western Powers. Against this, however, may be set the fact that in Europe, the Western Powers through N.A.T.O. and the E.D.C. organization are to-day better equipped to withstand an aggressive onslaught than they were a year ago. It may be that from this knowledge will flow an increasing determination in Western Europe to resist by all means in its power should aggression take place. Equally, this knowledge may itself have the effect of discouraging potential aggressors from any adventure which might result in a new war.

Whether this interpretation has validity or not, however, the attainment of armed security can only be effected at great cost in treasure and manpower at a time when they can ill be spared. The economic health of the free world must be maintained and this applies with particular force to the countries of South East Asia. The destruction of war, the movement and expansion of populations, the changes in governmental personnel and structural pattern, the rise in world prices, shortages of foodstuffs and consequent inflationary trends, all these factors have affected the economic health of this vast area. Bearing all this in mind it may be considered remarkable that the standards of living, of integrity, of industrial output and of international trade and exchange have exhibited so little depreciation over the past seven years. This fact, however, calls for no complacency, for populations continue to rise, food shortages are a continuing and perhaps increasing anxiety, so that the economic stability of South East Asia will continue to be of the first importance to the free world for years to come.

Two important Commonwealth Conferences took place during 1952. The first to agree on mutual steps to check the drain on reserves which presented a dangerous threat to the entire sterling area. The second, to review the results achieved and agree on future plans to promote industry, commerce and trade for the benefit of all. There is no doubt that the fiscal policy of the U.K. during the year, together with the steps taken by mutual agreement throughout the Commonwealth, checked the drain on reserves and strengthened the position of sterling; no small achievement bearing in mind the burden of rearmament.

The fall in prices of many commodities which commenced in 1951 continued in 1952, and whilst price recession is an undoubted check to inflation, it has its own dangers if it takes place too fast or goes too far.

On the whole, trade and industry in India had a somewhat disturbing year.

According to the Indian Food Minister, India is steadily progressing towards self-sufficiency in food and there is no doubt that should this come about it will effect the greatest contribution to stability and prosperity in India and throughout South East Asia.

Pakistan has been through a difficult year from almost every point of view. Pakistan is still without a written Constitution and its Assembly consists of the original members existing at the time of Partition in 1947. Until the new Constitution is finalized and elections for the new Parliament held, the state of uncertainty as to the future must be expected to continue. The economic difficulties, inflation, and internal political stresses and strains bear particularly hardly upon a young country still in the throes of Constitution-making.

The statement then reviews in detail the other areas in which the Bank has interests.

THE CHARTERED BANK OF INDIA, AUSTRALIA AND CHINA

A CENTURY OF PROGRESS

The Ninety-ninth Ordinary General Meeting of The Chartered Bank of India, Australia and China will be held in London on 1st April.

The following is an extract from the statement by the Chairman, **Mr. V. A. Grantham,** circulated with the report and accounts for the year 1952:—

In my last Statement I referred to the approaching centenary of the incorporation of the Bank by Royal Charter. The Great Seal of the Realm was affixed to the Charter on 29th December, 1853, and although the 100th annual meeting of the Stockholders will not take place until 1954, it has seemed fitting to regard 1953 as our centenary year, as indeed it is.

Great Britain is the classic land of joint stock banking, and although many of the great British financial institutions whose names are known and honoured throughout the commercial world have already passed their centenaries, few have preserved, as the Chartered Bank has, their complete independence and their original constitutional forms. Of the numerous overseas banks granted Royal Charters during the 19th century only The Chartered Bank of India, Australia and China survives as originally incorporated, and it continues to prosper throughout those countries in Southern Asia which were a hundred years ago still under the jurisdiction of the East India Company, and in those lands which are quaintly described in our Charter as the Eastern Archipelago.

Since its founders met in Threadneedle Street over a century ago to petition the Crown for the grant of a Royal Charter of Incorporation, the activities of the Bank have touched world history on many occasions and in many places. It is remarkable that the Chartered Bank, founded as it was when the British Empire, sustained by an unchallenged sea power, was approaching the height of its power and its glory, should find in these changed days more opportunities than ever before of fulfilling the constructive and pacific aims of its founders.

Carlyle observed that history is the essence of innumerable biographies. Down the years the Bank has been well served by its principal executives, the branch managers and a devoted rank and file. The service of the Bank has become a tradition and the present generation continue to manifest the skill, enterprise, loyalty and fortitude which were characteristic of their pioneer predecessors. The present occasion, marking as it does the culmination of a century's successful endeavour, affords me once again an opportunity of acknowledging the exceptionally distinguished services rendered to the Bank by its present Chief General Manager, Mr. W. R. Cockburn.

As forecast in my statement a year ago, when I suggested that we might look for lower figures, the total of the Bank's Balance Sheet shows a fall of some £5,000,000 from the record figures of last year.

It is, perhaps, wrong to attach too much importance to the total of the Balance Sheet, for it merely represents the sum of the position as at the end of the year in all the eighteen separate areas in which the Bank operates, and our experience in these areas has been far from uniform. In general terms, however, it is safe to say that, while the reduction is due in large measure to the almost universal fall which has taken place in commodity prices over the past year or more, it also reflects some decrease in the volume of the foreign trade of the United Kingdom and other Dominions and territories of the Commonwealth within our sphere of operations, caused by restrictive measures upon imports designed to improve the Commonwealth's balance of payments, especially with "hard" currency countries.

On the left hand, or Liabilities side of the Balance Sheet, Current and other Accounts, Bills Payable and Loans Payable show decreases of £8,536,218, £1,158,363 and £1,400,833, respectively, offset by a moderate increase in Fixed Deposits of £873,917. On the other hand, Acceptances are up by the relatively substantial figure of £4,051,448, this being accounted for by calls to finance heavier than usual shipments of food and raw materials around the end of the year against the trend already noted. Notes in Circulation remain at practically the same figures as last year.

On the right hand, or Assets side, Cash in Hand at Call and at Bankers, and Advances to Customers and other Accounts, are down by £2,016,368 and £17,531,539 respectively. The substantial reduction in the total of our Advances, while in conformity with the officially expressed desires of our own and other Governments that Banks should, in the National interests, adopt a more restrictive lending policy, is largely due to the falls in commodity prices of which mention has been made above. Government and other Securities (apart from those lodged against our Note Issue) and Bills of Exchange (including United Kingdom, Dominion, Colonial and Foreign Treasury Bills) are up by £4,198,187 and £2,223,056 respectively, these increases reflecting in the main the switch from Advance to more liquid assets. Fixed Assets, after allowing for amounts written off, show a slight decrease of £69,086.

Considered as a whole, the Balance Sheet reveals a position of enhanced strength and a sound balance between the conflicting demands of liquidity and earning capacity.

The net profits for the year amount to £698,782, an increase over those of last year of £1,685. When commenting upon the record results achieved last year, I stated that it would be foolhardy, in the face of the recession we were then experiencing (and which has continued ever since), not to be prepared for some reduction in future profits. In the face of continuously deteriorating conditions throughout practically all the territories in which the Bank operates, accompanied by constantly rising costs, including taxation, which in all countries takes heavy toll upon our earnings, our results can only be considered very satisfactory.

Last year I mentioned the heavy depreciation which had taken place in the market value of our investments in Government securities. There has been a modest recovery this year, but naturally this has not figured in our computations in assessing our profits. We have never departed from our custom of valuing our securities at or below market values and, as before, all our holdings are dated and in large proportion short dated.

We paid a dividend in October last of 7 per cent, less Income Tax, absorbing £110,250, and it is proposed that, out of the balance now available a final dividend of 7 per cent, less Income Tax, should be paid costing £110,250, and this being our centenary year, it is further proposed that a special centenary bonus dividend of 2 per cent, less Income Tax, should be paid costing £31,500, making the total distribution for the year 16 per cent. At the same time, bearing in mind the great services rendered to us by our staffs everywhere, we have decided to pay a special Centenary Bonus of 10 per cent of their salaries to all members of the Staff throughout this country and abroad.

Two years ago we augmented the Bank's Reserve Fund by transferring to it £1,000,000 from Contingencies Account, restoring the Reserve Fund to £4,000,000 the figure at which it stood before 1931. I pointed out at the time that our Balance Sheet total had increased out of all proportion to the Issued Capital Stock and Reserve Fund. This matter has continued to give us concern, and, accordingly, before closing the books on this occasion we transferred a further £1,000,000 from Contingencies to the Reserve Fund, raising it to £5,000,000 with a view subsequently to capitalizing £500,000 of this sum. A Resolution will be placed before the Stockholders at an Extraordinary General Meeting to be held after the Ordinary General Meeting on 1st April, at which consent will be sought to this capitalization of £500,000 from the Reserve, which will have the effect of making the Capital of the Bank £3,500,000, and the Reserve Fund £4,500,000. The consent of the Capital Issues Committee has been obtained to this new issue, and we hope that it will be possible to maintain the 14 per cent rate of dividend. It is an added pleasure that we find ourselves in a position to take this step forward in our Centenary year.

A glance around the horizon I surveyed in my last report reveals that the position in practically every country in which the Bank operates in the East, has deteriorated economically and financially. This has been so even in those areas, e.g. Malaya, Sarawak, North Borneo, and Hongkong, where currency reserves are automatically created and preserved, for, like other countries in the Far East, they, with the exception of Hongkong, being large producers of raw commodities, experienced a steep recession as a result of the almost universal fall in the prices of their main products. Nor did they escape the consequences of overspending by Governments and peoples induced by the preceding period of high prices, which, as also in other countries of the Far East not so fortunately placed in regard to the creation and preservation of currency reserves, over-encouraged imports. These, under the changed conditions, the bazaars and markets of the East have found it difficult to absorb.

While it is true to say that conditions economically and financially have deteriorated considerably almost everywhere in the East over the past year, it would be wrong to attempt to apply a rigidly Western yardstick to the measurement of the extent of the deterioration which has taken place, or to the consequences which might be expected to flow therefrom.

Naturally the consequences cannot be entirely avoided; but the capacity of peoples governing themselves for the first time in history for self-discipline and recovery, may well prove to be greater than has been hitherto suspected, and it would be unwise to fail to take that capacity into account.

The Chartered Bank of India, Australia and China

(INCORPORATED BY ROYAL CHARTER, 1853)

CAPITAL STOCK, Authorised and Issued - - - - - - - - - - £3,000,000
RESERVE FUND - - - - - - - - - - - - £5,000,000
RESERVE LIABILITY of the STOCKHOLDERS - - - - - - - - - - £3,000,000

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West End Branch : 28 CHARLES II STREET, HAYMARKET, S.W.1.
Manchester Branch : 52/54 MOSLEY STREET, MANCHESTER, 2.
Liverpool Branch : 27 DERBY HOUSE, EXCHANGE BUILDINGS, LIVERPOOL, 2.

BALANCE SHEET, 31st DECEMBER, 1952

	£	£	1951 £
CAPITAL—			
Stock authorised and issued	3,000,000		3,000,000
(There is under the Charter a reserve liability of the Stockholders equal to the amount of Stock issued.)			
RESERVE FUND	5,000,000		4,000,000
PROFIT AND LOSS ACCOUNT	399,215		397,433
		8,399,215	7,397,433
CURRENT AND OTHER ACCOUNTS, including Reserves for Contingencies, Taxation on profits to date and Exchange Adjustments	160,608,784		169,145,002
FIXED DEPOSITS	19,479,617		18,605,700
NOTES IN CIRCULATION against Security per contra	2,564,308		2,549,629
BILLS PAYABLE	1,372,229		2,530,592
LOANS PAYABLE	—		1,400,833
DEPOSITS BY NOMINEE SUBSIDIARIES ..	381		381
DEPOSIT BY TRUSTEE SUBSIDIARY ..	13,042		8,993
PROPOSED FINAL DIVIDEND AND BONUS, less Income Tax	141,750		110,250
ACCEPTANCES, including undertakings to accept, on account of Customers ..	15,935,514		11,884,066
		200,115,625	206,235,446
		£208,514,840	£213,632,879

	£	£	1951 £
CURRENT ASSETS—			
CASH IN HAND, AT CALL AND AT BANKERS		31,787,819	33,804,187
GOVERNMENT AND OTHER SECURITIES AT MARKET VALUE—			
Quoted on London Stock Exchange	53,243,093		49,827,629
Quoted on Overseas Stock Exchanges	9,714,972		9,059,192
Dominion Government and other Securities at Local quotations ..	3,342,070		3,215,127
		66,300,135	62,101,948
HONGKONG GOVERNMENT CERTIFICATES OF INDEBTEDNESS for surrendered coin lodged against Note Issue	929,278		1,179,278
BRITISH GOVERNMENT SECURITIES at Market Value (Quoted on London Stock Exchange) lodged against Note Issue	1,741,250		1,750,000
		2,670,528	2,929,278
BILLS OF EXCHANGE, including United Kingdom, Dominion, Colonial and Foreign Treasury Bills		15,110,157	12,887,101
ADVANCES TO CUSTOMERS AND OTHER ACCOUNTS		69,247,953	86,779,492
BALANCE OF REMITTANCES, DRAFTS, ETC., IN TRANSIT between Head Office, Branches and Agencies ..		4,832,865	547,852
LIABILITY OF CUSTOMERS FOR ACCEPTANCES, including undertakings to accept per contra		15,935,514	11,884,066
		205,884,971	210,933,924
FIXED ASSETS—			
SUBSIDIARIES—Shareholdings at cost—			
Allahabad Bank, Limited—37,663 Ordinary Shares of Rs. 100 each of which 14,665 are fully paid and 22,998 are paid up to the extent of Rs. 50 per share	747,905		747,705
The Chartered Bank (Malaya) Trustee Limited—			
30,000 Shares of Straits $10 each, $5 paid	17,500		17,500
Nominee Companies	381		381
The net assets of the Nominee Companies amount to £381, represented by deposits with the Bank, per contra			
	765,786		765,586
BANK PREMISES AND FURNITURE, at cost less amounts written off ..	1,845,520		1,912,744
TRADE INVESTMENT, representing Property, at cost less amount written off	18,563		20,625
		2,629,869	2,698,955
		£208,514,840	£213,632,879

NOTES :—

(1) There are contingent liabilities on Bills rediscounted, £3,061,868 (1951, £19,553,080) (of which £2,802,332 has run off at 2nd March, 1953) and commitments in respect of Confirmed Credits, Forward Exchange Contracts and Guarantees, including Guarantees to Government Departments in India in respect of which securities valued at £184,570 have been deposited with the Reserve Bank of India.

(2) Contracts for outstanding capital expenditure on premises amount to approximately £224,000 (1951, £77,000).

(3) Assets and Liabilities in foreign currencies have been converted into sterling at approximately the rates of exchange ruling on 31st December, 1952.

(4) Under Part III of the Eighth Schedule to the Companies Act, 1948, the Bank is exempted from showing the aggregate amount of its reserves and the movements therein.

W. R. COCKBURN, *Chief General Manager.*
H. F. MORFORD, *Deputy Chief General Manager.*
W. H. CARRICK, *Chief Accountant.*

V. A. GRANTHAM, *Chairman.*
J. H. S. RICHARDSON, J. TAIT } *Directors.*

REPORT OF THE AUDITORS TO THE STOCKHOLDERS

We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit. In our opinion proper books of account have been kept by the bank so far as appears from our examination of those books, and proper returns adequate for the purposes of our audit have been received from the branches, which have not been visited by us. We have examined the annexed balance sheet and profit and loss account of The Chartered Bank of India, Australia and China, which are in agreement with the books of account and returns as aforesaid. In our opinion and to the best of our information and according to the explanations given to us the said accounts give the information required by the Companies Act, 1948, in the manner so required for banking companies, and, on the basis indicated in Note (4) on the balance sheet, such balance sheet gives a true and fair view of the state of the bank's affairs as at 31st December, 1952, and the profit and loss account gives a true and fair view of the profit for the year ended on that date.

We have also examined the annexed accounts of the subsidiaries, Allahabad Bank, Limited, and The Chartered Bank (Malaya) Trustee Limited, which have not been audited by us. Subject thereto in our opinion such accounts have been properly prepared in accordance with the provisions of the Companies Act, 1948, so as, in conjunction with the accounts of the bank as audited by us (which include particulars regarding Nominee Companies), to give on the basis mentioned above a true and fair view of the state of affairs as at 31st December 1952, and of the profit for the year ended on that date of the bank and its subsidiaries so far as concerns stockholders of The Chartered Bank of India, Australia and China.

W. A. BROWNE & CO.
DELOITTE, PLENDER, GRIFFITHS & CO. } *Auditors, Chartered Accountants.*

London, 4th March, 1953.

Profit and Loss Account for the year ended 31st December, 1952

	£	£	1951 £
ALLOCATIONS—			
Amount written off Bank Premises	200,000		200,000
Officers' Pension Fund	125,000		125,000
Widows' and Orphans' Fund..	20,000		20,000
Contingencies Account	100,000		100,000
		445,000	445,000
DIVIDENDS PAID AND PROPOSED, less Income Tax—			
Interim 7% paid 3rd October, 1952 ..	110,250		110,250
Final 7% proposed	110,250		110,250
14%		220,500	220,500
Centenary Bonus of 2% proposed		31,500	—
BALANCE PROPOSED TO BE CARRIED FORWARD		399,215	397,433
		£1,096,215	£1,062,933

	£	1951 £
BALANCE BROUGHT FORWARD FROM 31ST DECEMBER, 1951	397,433	365,836
PROFIT, after providing for taxation and after making allocations to Contingency Accounts, out of which Accounts full provision has been made for diminution in value of assets	698,782	697,097
	£1,096,215	£1,062,933

NOTES :—

(1) The aggregate emoluments received by the Directors for their services amounted to £19,050 (1951, £19,280). In addition a pension of £454 was paid to a former Director.

(2) The nominee subsidiaries do not trade and their accounts show neither profit nor loss.

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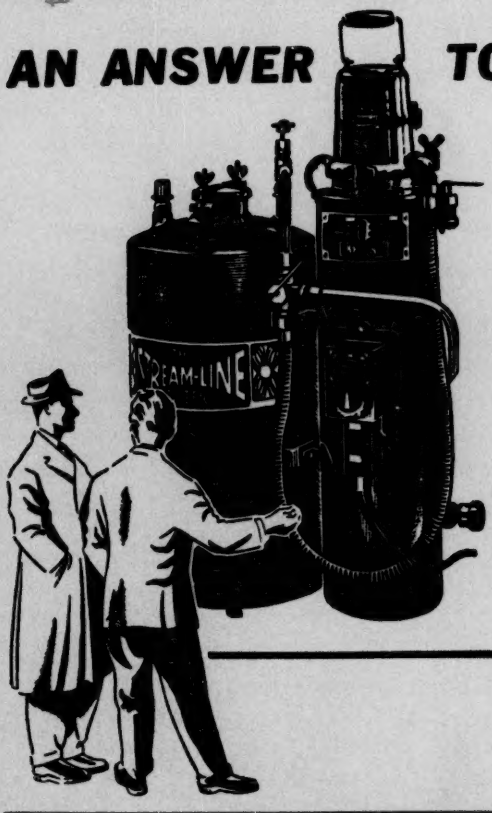

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